

GEOLOGICAL SURVEY OF CANADA.

ROBERT BELL, M.D., Sc.D., LL.D., F.R.S.

CATALOGUE
OF
CANADIAN PLANTS

PART VII.—LICHENES AND HEPATICÆ

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PREFACE.

When Part VI. of the Catalogue of Canadian plants was published in 1892, there was sufficient material at hand to allow of the inclusion of the Lichens and Liverworts in that number, but there were still such large tracts of country in which no botanical work had been done that it seemed advisable to confine the scope of that volume to the Musci. The present part contains all the species of Lichens and Liverworts known to occur in Canada, and an addendum to Part VI. in which our knowledge of American Mosses north of the United States is brought up to date.

My collections of Hepaticæ were commenced in 1862, and the specimens were examined and my determinations verified by Mr. C. F. Austin, who continued to work at them up to the time of his death. There was then no one in America to whom I cared to send difficult species for determination, but shortly afterwards I made the acquaintance of Mr. C. M. Pearson, of Manchester, England, who undertook to examine my material. Mr. Pearson's work resulted in a pamphlet published in 1892, in which were enumerated all the species known to occur in Greenland, Canada and Alaska. The total number of species enumerated in the region covered by Mr. Pearson's list was 165.

For many years, difficult specimens were submitted to Prof. Underwood, who assisted me in many ways in my studies of Liverworts, and later Prof. A. W. Evans, New Haven, Conn., gave me valuable assistance, so valuable that without his help this section of the catalogue could not have been written at this time. Besides naming all my later collections, he carefully examined many doubtful specimens that had accumulated since the publication of Mr. Pearson's list, and I was thus enabled to give these doubtful species their proper place in the series.

During the lifetime of Prof. Tuckerman, all my collections of Lichens were examined by him, and after his death Dr. Eckfeldt, of Philadelphia, Pa., was of much assistance to me in my Lichen studies. In 1895 I opened up a correspondence with Rev. J. S. Deichmann Branth, of Sneptrup, Denmark, and by his kindness and assistance I have been enabled to complete my list of the rock Lichens, and those obscure forms grouped after Lecidea.

The addendum to Part VI. is compiled to agree in arrangement with the previous portion, and the generic names used therein, have for the same reason been kept almost unchanged. As in Part VI., Dr. Kindberg is my authority, unless otherwise stated, for the names of all species except those collected in Ontario in 1901, which were named by Mrs. E. G. Britton. I have, however, freely availed myself of the work of this lady, Dr. A. J. Grout, Dr. Best, Mr. Cheney and others.

Dr. Kindberg's work has been of immense service in increasing our knowledge of Canadian Bryology, as it was he, who, working with Dr. C. Mueller, made known the great wealth of species in our country, and by his invaluable assistance the writer was enabled to separate many new forms from the mass of material which had hitherto been overlooked or misnamed by other workers. A new impetus was given to collecting, and since the publication of Part VI., fully two hundred new forms have been added to our moss-flora. In Part VI, 953 species were enumerated; in the addendum now published, the list is brought up to 1196, and only a few species have been discarded. It is quite true that some of Dr. Kindberg's species have been shown to be only forms of other species, but such corrections must be made in the work of all botanists, and some of his critics, in proportion to their published work, have been as great sinners in this respect as Dr. Kindberg. Dr. Kindberg's work was so far in advance of anything that had been done in Canadian Bryology before his time that there would be great injustice in withholding from him full credit for what he has accomplished.

Whenever genera have been monographed in recent years and the loan of our herbarium sheets has been asked, they have been freely lent, and in the body of the present work the changes made by the writers of these monographs have been indicated.

The specimens of cryptograms in the herbarium of the Geological Survey number over 16,000, so that it will be seen that the great majority of those referred to in Part VI and in the present catalogue are in our own herbarium. The writer has been the chief collector of these specimens, but many others have contributed to both knowledge and material. As the collector's name is in every case given after each citation, the amount of work done by each is evident and no special reference need be made to them here by name.

PREFACE.

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It should be noted that the word Labrador has in this, as in former catalogues, been used in the broad sense which includes the whole peninsula north of the province of Quebec. With the exception of the records credited to Mr. Waghorne, nearly every other Labrador reference is to Ungava District, which is bounded on the west by the Hudson Bay, on the north by Hudson Strait, on the east by the Atlantic Ocean, and on the south by the Province of Quebec.

JOHN MACOUN.

JUNE 12th, 1902.

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HEPATICÆ.

ORDER I. RICCIACEÆ.

1. **RICCIA**, Micheli.

1. **R. arvensis**, AUST., Phil. Acad. Sc. XXI. 232.

On damp earth which has been covered by spring floods, east side of Leamy's Lake near Hull, Que., Sept., 24th, 1889. (*Macoun.*)

2. **R. lutescens**, SCHWEIN

On the borders of muddy pools east of Belleville, Hastings Co., Ont., Aug. 13th, 1868. (*Macoun.*)

3. **R. Austinii**, STEPH.

Ontario. (*Underwood.*)

4. **R. fluitans**, LINN.

Very abundant in Patterson's Creek, Ottawa, Ont.; in the creek in the beaver meadow, west of Hull, Que.; very abundant in the marshes along the Bay of Quinte at Belleville, Ont., and on the south side of Massasauga Point, August 1st, 1873; in an old canal between Point Edward and Sarnia, Ont., August 14th, 1901; common in a pool at Sicamous, B. C. (*Macoun.*) In stagnant water near the round-house, Montrose, Ont., July, 1897. (*R. Cameron*)

5. **R. Sullivantii**, AUST.

On the muddy borders of pools east of Belleville, Hastings Co., Ont., July 16th, 1871; on a mud flat near McAdie's mill, Kennebec, Addington Co., Ont., July 11th, 1870. (*Macoun.*)

6. **R. sorocarpa**, BISCH.

Scoresby Sound, East Greenland, Lat. 70° 15'. (*C. Jansen.*)

2. **RICCIOCARPUS**, Corda.7. **R. natans**, (LINN.) CORDA.

In a stagnant pool near Montrose round-house, Ont., July, 1897. (*R. Cameron.*) In a pond near London, Ont. (*J. Dearness.*) In stagnant pools east of Beechwood, Ottawa, Ont.; also in pools at Belleville, Hastings Co., Ont.; in pools at Niagara Falls, May 13th, 1901; in pools at Port Heney, Fraser River, B.C.; common in a pool at Lost Lake, Cedar Hill, Victoria, Vancouver Island. (*Macoun.*)

Var. **terrestris**. (Scarcely distinct.)

On earth along the Ottawa and Lièvre rivers at their confluence near Buckingham, Que., 20 miles below Ottawa, Ont., Sept. 18th, 1892. (*Macoun.*)

ORDER II. MARCHANTIACEÆ, LIVERWORTS.

3. **TARGIONIA**, Linn.8. **T. hypophylla**, LINN.

Under sloping rocks, Pier's farm, and on damp rocks, Parson's Mountain, near Victoria, Vancouver Island, B.C., May 9th and 17th, 1893. (*Macoun.*)

4. **PELTOLEPIS**, Lindb.9. **P. grandis**, LINDB.

Scoresby Sound, East Greenland, Lat. 70° 15'. (*C. Jansen.*)

5. **SAUTERIA**, Nees.10. **S. alpina**, (NEES & BISCHOFF) NEES.

Collected at Behring Strait by the North Pacific Expedition under Commander Rodgers. (*Austin.*) On earth under rocks, Sulphur Mountain, Banff, July 16th, 1891, and under rocks at Lake Louise, Rocky Mountains, August 19th, 1891. (*Macoun.*) St. Paul Island, Pribyloff Group, Behring Sea, 1897. (*Howe.*) Scoresby Sound, Lat. 70° 15', East Greenland. (*C. Jansen.*)

6. **CLEVEA**, Lindb.11. **C. hyalina**, (SOMM.) LINDB.

Rittenbæk, Greenland. (*Vahl.*) On earth near the snow, mountain north of Kicking Horse Lake, Rocky Mountains, alt. 8,000 feet, July 21st, 1885; by a glacier in Roger's Pass, Selkirk Mountains, B.C., Aug. 24th, 1885; crevices of rocks at Revelstoke, west side of Columbia River, B.C., and in the Eagle Pass further west, May 23rd and 31st, 1890. (*Macoun.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

7. **REBOULIA**, Raddi.12. **R. hemisphærica**, (LINN.) RADDI.

On calcareous earth on limestone rocks, Point Wilkins, Lake Winnipegosis, Man., July 16th, 1881; crevices of rock, Eagle Pass, B.C., May 31st, 1890. (*Macoun.*)

8. **GRIMALDIA**, Raddi.13. **G. rupestris**, (NEES) LINDB.

On calcareous rocks at Rockcliffe, Ottawa, Ont., 1884; in the crevices of limestone rocks, on the right bank of the Moira, above the railway bridge, Belleville, Hastings Co., Ont., June 16th, 1867. (*Macoun.*) Mount Albert, Gaspé Co., Que. (*Underwood.*)

14. **G. fragrans**, (BALB.) CORDA.

Collected in the Yukon River district by Funston in 1894. (*Evans.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

9. **ASTERELLA**, Beauv.15. **A. Californica**, (HAMPE) UNDERW.

Fimbriaria Californica, Hampe.

On earth at Lytton, B.C., April 16th, 1889; on stones in a brook, Pass Creek, Columbia River, B.C., June 21, 1890. (*Macoun.*) Named by Dr. Underwood.

16. **A. violacea**, (AUST.) UNDERW.*Fimbriaria violacea*, Aust. ; Pearson's List No. 149.

On wet soil on the summit of the mountain north of Kicking Horse Lake, Rocky Mountains, July 21st, 1885 ; at the glacier on the shoulder of Mount Tupper, Roger's Pass, Selkirk Mountains, B.C., Aug. 24th, 1885. (*Macoun.*)

17. **A. gracilis**, (WEB. f.) UNDERW.*Fimbriaria pilosa*, (Wahlenb.) Tayl. ; Pearson's List No. 150.*Fimbriaria tenella*, Nees ; Pearson's List No. 151.

Greenland. (*Vahl.*) On the upper slope of the mountain north of Kicking Horse Lake, Rocky Mountains, July 21st, 1885 ; on rocks west of Revelstoke, in the Eagle Pass, B.C. ; in the crevices of rocks on the mountains at Yale, B.C., May 17th, 1875 ; on rocks at Agassiz, B.C. ; on earth along Goldstream near Victoria, Vancouver Island ; at Comox, Vancouver Island ; on earth on rocks, Mount Erskine, Salt Spring Island, Gulf of Georgia, B.C., May 9th, 1887. (*Macoun.*) On earth, Chilliwack Lake, B.C., alt. 5,000 feet. (*J. M. Macoun.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

18. **A. fragrans**, (SCHLEICH.) TREVIS.

Telegraph Creek, northern British Columbia, May 27th, 1887. (*Dr. G. M. Dawson.*) It is probable that the specimens referred to *A. violacea* belong here. They were named as above by Mr. Pearson.

10. **CONOCEPHALUM**, Wiggers.19. **C. conicum**, (LINN.) DUMORT.*Hepatica conica*, (LINN.) Michx. ; Pearson's List No. 165.

Along the Tobique River, N.B. (*Hay.*) On old logs in swamps, River Rouge, Argenteuil Co., Que. (*D'Urban.*) On wet rocks by brooks, Margaree, Cape Breton Island, N.S., July, 1898 ; quite common on old logs by brooks, fruiting abundantly, around Ottawa ; in shady swamps at Belleville, Hastings Co., Ont. ; on

old logs, Foster's Flats, Niagara Falls, May, 16th, 1901; wet woods, Hastings, Burrard Inlet, B.C.; on earth by a spring at Comox, Vancouver Island. (*Macoun.*) Prince of Wales Island, Alaska. (*J. M. Macoun.*) Juneau, Disenchantment Bay, Yakutat Bay, Unalaska, Farragut Bay and other parts of Alaska. (*Evans.*) Salmon Creek, Juneau, Alaska. (*Miss G. Cooley.*)

11. CYATHOPHORA, S. F. Gray.

20. *C. quadrata*, (SCOP.) TREVIS.

Preissia commutata, Nees.; Pearson's List No. 164.

Quite common on wet earth at Truro, N.S.; on wet limestone rocks, along the Gaspé coast, Que.; along Guo'n River, Anticosti; on wet earth, Grand Narrows, Cape Breton Island, July, 1898; rocky banks near Belleville and along a small brook, Huntingdon, Hastings Co., Ont.; crevices of rocks, Foster's Flats, Niagara Falls, May 16th, 1901; wet ground along Lake Nipigon; on earth in many places along Lake Superior; on earth at the "Cave Mounds," Banff, Rocky Mountains; Hector and Lake Agnes, Rocky Mountains; in Crow's Nest Pass, Rocky Mountains, Alta.; on earth at Albert Cañon, Selkirk Mountains, B.C.; under wet rocks, Eagle Pass, Gold Range, B.C.; on rocks at Revelstoke, Columbia River, B.C.; on wet earth Kootenay Lake, B.C. (*Macoun.*) Cape Vancouver, Alaska. (*J. M. Macoun.*) Chilcat, Alaska. (*Krause.*) Juneau, Wrangell, Muir Glacier, Point Gustavus, mountains near Juneau, Alaska. (*Miss G. Cooley.*) Hooniah Village, Port Wells, and Coal Creek Hill, Alaska. (*Evans.*) Scoresby Sound, Lat. 70° 15', and Hold-with-Hope, Lat. 73° 30', East Greenland. (*Jansen.*)

12. MARCHANTIA, Linn.

21. *M. polymorpha*, LINN.

Godhavn, Greenland, June 25th, 1886. (*Rosenvinge.*) Labrador. (*Waghorne.*) On damp earth, Tobique River, N.B. (*Hay.*) On damp earth, Missinaibi River, northern Ontario. (*Dr. R. Bell.*) On earth, River Rouge, Argenteuil Co., Que. (*D'Urban.*) Cape Breton Island, N.S., and Woodstock, N.B.; in ditches at Truro, N.S.; on earth along the Gaspé coast, Que.; very common at Ottawa and Belleville and throughout Ontario; in swamps and wet woods, Nipigon River; on wet earth, Lake Manitoba, Man.,

1881; on wet earth in stream valleys, Cypress Hills, Assa.; Jumping Pound Creek, Rocky Mountains, June, 1897; on earth in bogs, Eagle Pass, B.C.; in ditches at New Westminster, Vancouver, and Hastings, B.C.; wet places near Victoria, Goldstream and Cedar Hill, Vancouver Island. (*Macoun.*) On earth Kootenay Valley, Rocky Mountains, B.C.; on earth at Adam's Lake, B.C.; Upper Liard River, northern B.C. (*Dr. G. M. Dawson.*) Saskatchewan and Rocky Mountains. (*Bourgeau.*) Alaska. (*Krause.*) Glacier Bay, Orca, St. Paul Island, St. Matthew Island and Hall Island, Alaska. (*Evans.*) Nanaimo, Vancouver Island, also mountains near Juneau, Alaska. (*Miss G. Cooley.*) Unalaska. (*Evans.*) West Dawson, Yukon. (*Williams.*) East Greenland. The var. *alpestris*. (*C. Jansen.*)

ORDER III. METZGERIACÆ.

13. **METZGERIA**, Raddi.

22. **M. pubescens**, (SCHRANK) RADDI.

British Columbia. (*Lyall.*) Alaska. (*Krause.*) On boulders at Kicking Horse Lake, Rocky Mountains, B.C.; on rocks in the Coast Range above Yale, B.C., May 17th, 1875; on trees at Hastings, Burrard Inlet, B.C., 1889. (*Macoun.*) On shaded rocks, Chilliwack River, B.C., 1901. (*J. M. Macoun.*) Gold Creek near Juneau, Alaska. (*Miss G. Cooley.*) On rocks at Cañon City, Alaska, March 27, 1898. (*Williams.*)

23. **M. myriopoda**, LINDB.

On damp rocks near Ironsides, Que., 5 miles from Ottawa, Ont., Oct. 21st, 1884. (*Macoun.*)

24. **M. conjugata**, LINDB.

On stones in McKay's woods at Ottawa, Ont., Oct. 9th, 1884; on rocks at C  che Lake, Algonquin Park, Ont., June 9th, 1900; on *Acer circinatum* at Hastings, Burrard Inlet, B.C.; on damp rocks at Goldstream, near Victoria, Vancouver Island and at Qualicum and Comox, V.I. (*Macoun.*) Blankensop Bay, V.I. (*Dr. G. M. Dawson.*)

25. **M. hamata**, LINDB.

Gold Creek near Juneau, Alaska. (*Miss G. Cooley.*)

14. **ANEURA**, Dumort.26. **A. latifrons**, LINDB.

Miquelon Island, Gulf of St. Lawrence. (*Celàmare*.) On earth, Salt Lake, Anticosti, August 10th, 1883 ; on dead wood at Baddeck and Margaree, Cape Breton Island, July, 1898 ; on old logs, Beechwood, Hemlock Lake and Britannia, near Ottawa ; on rotten wood, Otter Pond, near Brackley Point, Prince Edward Island ; on old stumps, Algonquin Park, Ont., July, 1900 ; on rotten wood, Hastings, Burrard Inlet, B.C. ; on old logs, in woods at Revelstoke, Columbia River, B.C. ; on dead wood, Parson's Mountain, Sea's farm, and Cedar Hill, near Victoria, Vancouver Island ; on wet logs at Nanaimo, V.I. ; on dead wood at Comox, V.I. ; very common. (*Macoun*.) Mt. Verstovia and Faragut Bay, Alaska. (*Evans*.)

27. **A. palmata**, (HEDW.) DUMORT.

On rotten stumps at Truro, N.S. ; on old logs in Dow's Swamp and at Beechwood, Ottawa, Ont. ; on rotten logs at Belleville, Hastings Co., Ont. ; on rotten wood at Hastings, Burrard Inlet, B.C. ; on rotten stumps, Cedar Hill, near Victoria, Vancouver Island ; also on old logs at Comox, V. I. (*Macoun*.) Prince of Wales Island, Alaska. (*J. M. Macoun*.)

28. **A. sessilis**, (SPRENGEL) DUMORT.

On old logs in a swamp at Carleton Place, near Ottawa, Ont., May 30th, 1884 ; on wet earth and on logs at Belleville, Hastings Co., Ont., July 12th, 1873. (*Macoun*.) This species is now included in the preceding by authors.

29. **A. pinnatifida**, NEES.

On wet earth in a road cutting, at the junction of the Sooke Lake Road, with that to Goldstream, near Goldstream, Vancouver Island, B.C., June 2nd, 1893. (*Macoun*.)

30. **A. pinguis**, (LINN.) DUMORT.

Umanakfjord, Greenland. (*Vanköffen*.) On wet earth at Gunn, St. Mary's and Becscie rivers, Anticosti ; on peat moss Mer Bleue, near Ottawa, June 15th, 1892 ; on roots and moss in

water, "Big Swamp," Murray, Northumberland Co., Ont., August 3rd, 1873; in a bog near the C. P. R. station at Banff, Rocky Mountains; in bogs, House Mountain, near Lesser Slave Lake, Atha.; on old logs in a swamp at Quesnel, B.C.; also on sticks in pools in woods at Comox, Vancouver Island. (*Macoun.*)

31. **A. multifida**, var. **ambrosioides**, (NEES) LINDB.

On earth in a swamp at Nanaimo, June 4th, 1887, and on earth in pools in woods at Comox, Vancouver Island, May 3rd, 1887. (*Macoun.*)

15. **PALLAVICINIA**, S. F. GRAY.

32. **P. hibernica**, (HOOK.) S. F. GRAY.

On the bank of a creek in a beaver meadow, Huntingdon, North Hastings, Ont., September 8th, 1865; on wet limestone rocks at the head of Lake Louise, near Laggan, Rocky Mountains; on earth on the mountains north of Griffin Lake, Gold Range, B.C., August 10th, 1889. (*Macoun.*) Yakutat Bay, Alaska. (*Evans.*)

33. **P. Lyellii**, (HOOK.) S. F. GRAY.

On moss in a wet place, Canaan Forks, Queen's Co., N. B. (*J. Moser.*) Along a small brook, Sidney, Hastings Co., Ont., Sept. 17th, 1868; on the bank of a brook, Algonquin Park, Ont., Aug. 10th, 1900. (*Macoun.*)

16. **PELLIA**, Raddi.

34. **P. epiphylla**, (LINN.) CORDA.

Labrador. Collected by Waghorne. (*Underwood.*) Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) West Ledge, Canaan Forks, Queen's Co., N. B. (*J. Moser.*) Bass River, Kent Co., N.B. (*Prof. Fowler.*) On damp earth by roadsides, Brackley Point, Prince Edward Island; on earth and wet rocks at Baddeck, Margaree, Aspy Bay and Louisburg, Cape Breton Island, N.S.; on earth at Leamy's Lake, near Hull, Que., Sept. 24th, 1889; on earth by a brook, South Indian near Ottawa, Ont.; on earth in a bog near New Westminster, B.C.; on earth in a brook at Hastings, Burrard Inlet, B.C.; on stones and earth by a brook at

Comox, Vancouver Island, July, 1898. (*Macoun.*) Salmon Creek, Sitka, Alaska. (*Miss G. Cooley.*)

Sterile specimens of a *Pellia* referred to this species have been gathered on Sable Island, N.S., at Woodstock, N.B., and in Algonquin Park, Ont.

35. ***P. endiviæfolia***, (DICKS.) DUMORT.

Labrador. Collected by Waghorne. (*Underwood.*) On earth in a ditch at Nanaimo and at Comox, Vancouver Island, June 4th, 1887. (*Macoun.*) St. Paul Island, Behring Sea, Aug. 18th, 1892. (*J. M. Macoun.*) Yakutat Bay, Alaska. (*Evans.*)

36. ***P. Neesiana***, (GOTTSCHE) LIMPR.

Douglas Island, Juneau, Port Wells, Orca, and Yakutat Bay, Alaska. (*Evans.*)

17. **BLASIA**, Linn.

37. ***B. pusilla***, LINN.

On earth by roadsides, Union Road, Brackley Point, Prince Edward Island; on wet rocks, Half-Way Brook, Cape Breton Island, July, 1898; on earth in a ravine at Woodstock, N.B., July, 1899; on earth along the Gaspé Coast, Que., Aug. 10th, 1882; on earth subject to inundations at Leamy's Lake, Hull, Que.; on wet clay banks, Meech's Lake, near Chelsea, Que.; clay banks at the mouth of the Lièvre River, Buckingham, Que.; not rare by lake shores, Algonquin Park, Ont., June, 1900; on earth along the Fraser River, Port Heney, B.C. (*Macoun.*) Juneau, Alaska. (*Evans.*)

18. **FOSSOMBRONIA**, Raddi.

38. ***F. longiseta***, AUST.

On earth, Mount Erskine, Salt Spring Island, Gulf of Georgia, B.C., May 9th, 1887. (*Macoun.*)

39. ***F. pusilla***, (LINN.) DUMORT.

Along the Addington Road near Flinton, Hastings Co., Ont., July 10th, 1870; on earth along Sproat Lake, eight miles above Alberni, Vancouver Island, August 12th, 1887. (*Macoun.*)

40. **F. foveolata**, LINDB.

Shores of Lake Nipissing, at North Bay, September 13th, 1889. (*Mrs. E. G. Britton.*) On earth subject to inundation, Leamy's Lake, near Hull, Que., September 24th, 1889; on earth by the Petewawa River, Algonquin Park, Ont., July, 1900; in the bed of the Bonnechère River at Golden Lake, Ont., September 27th, 1900; on old stumps subject to flood along Lake Duchesne above Britannia, near Ottawa, Ont., October, 29th, 1900; Craigallaichie, Eagle River, B.C., July 18th, 1889. (*Macoun.*)

41. **F. angulosa**, (DICKS.) RADDI.

On earth along Gull River, Victoria Co., Ont., July 28th, 1868. (*Macoun.*)

42. **F. Macounii**, AUST. Bot. Gaz. Vol. I. 36, 1876.

On earth and granitic sand along the lake at Methye Portage, (Portage La Loche) Lat. 57°, Athabasca, September 15th, 1875. (*Macoun.*)

ORDER IV. JUNGERMANNIACÆ.

19. **GYMNOMITRIUM**, Corda.43. **G. obtusum**, (LINDB.) PEARSON.

Cæsia obtusa, Lindb.; Pearson's List, No. 132.

Near Frederickshaab, Greenland. (*Vahl.*) On rocks, mountains north of Griffin Lake, B.C., August, 1889; on rocks, Mount Benson, near Nanaimo, Vancouver Island, July, 1893; on rocks, Pier's farm, Victoria, Vancouver Island, May, 1893. (*Macoun.*) Orca, Alaska. (*Evans.*)

44. **G. concinnatum**, (LIGHTF.) CORDA.

Cæsia concinnata (Dicks.); Pearson's List, No. 133.

Labrador, collected by Waghorne. (*Underwood.*) On earth, Asulcan Glacier, Selkirk Mountains, B.C.; on rocks, mountains north of Griffin Lake, Gold Range, B.C.; on rocks, Mount Mark, near Qualicum, Vancouver Island. (*Macoun.*) Alaska, near Chilcat. (*Krause.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

45. *G. corallioides*, NEES.

Casia corallioides, (Nees) S. F. Gray; Pearson's List, No. 131

Alaska. (*Krause.*) On rocks, Lake Lindeman, Yukon, and cañon above the lake, 1898. (*Williams.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

46. *G. crenulatum*, GOTTSCHKE.

Alaska. Collected by Krause. (*Stephani.*)

47. *G. revolutum*, (NEES) SCHIFFON.

Greenland. (*Berggren.*)

20. *MARSUPELLA*, Dumort.48. *M. emarginata*, (EHRH.) DUMORT.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) Labrador. Collected by Waghorne. (*Underwood.*) On wet ground in a gully at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On wet rocks by a brook, Margaree and Half-Way Brook, Cape Breton Island, Aug., 1898; on earth in bogs at Banff, Rocky Mountains; on stones in a brook, Roger's Pass, Selkirk Mountains, B.C.; on stones and wet earth on mountains north of Griffin Lake, B.C.; on rocks at Yale, Fraser River, B.C.; on damp rocks, North Arm, Burrard Inlet, B.C.; on rocks at Goldstream, near Victoria, Vancouver Island; on rocks, Mount Benson, near Nanaimo, Vancouver Island, alt. 3,000 feet, June 8th, 1887; on rocks, Mount Mark, near Qualicum, Vancouver Island, alt. 3,000 feet; on wet rocks, Mount Erskine, Salt Spring Island, Gulf of Georgia, B. C.; on earth at Nanaimo, Vancouver Island, June 4th, 1887. (*Macoun.*) Attu Island, Behring Sea. (*J. M. Macoun.*) Port Wells, Columbia Fiord, Unalaska and Juneau, Alaska. (*Evans.*) Sheep Camp, Alaska, and on rocks above Long Lake, B.C., 1898. (*Williams.*)

Var. *aquatica*, PEARSON.

Newfoundland. (*Pearson.*) This may be *M. aquatica*, Schiffner.

49. **M. sphacelata**, (GRISECKE) DUMORT.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) On wet rocks, Half-Way Brook, Cape Breton Island, N.S., Aug., 1898 ; on wet rocks near the lighthouse at Yarmouth, N.S., June 23rd, 1883 ; on wet rocks in brooks, mountains north of Griffin Lake, Gold Range, B.C. (*Macoun.*) Chilcat, Alaska. (*Krause.*)

50. **M. sparsifolia**, (LINDB.) DUMORT.

On wet rocks at Nanaimo, Vancouver Island, June 4th, 1887 ; on rocks, Mount Arrowsmith, Vancouver Island, alt. 4800 ft, July 17th, 1887. (*Macoun.*)

51. **M. densifolia**, (NEES) DUMORT.

On stones in brooks, on the mountains north of Griffin Lake, Gold Range, B.C., Aug., 7th 1889. (*Macoun.*)

21. **NARDIA**, S. F. Gray.52. **N. compressa**, (HOOK.) S. F. GRAY.

Greenland. (*Vahl.*) On Atka Island, Aleutian Islands, Alaska, 29th Aug., 1891. (*J. M. Macoun.*)

53. **N. scalaris**, (SCHRAD.) S. F. GRAY.

Campo Bello Island, N.B., 1898. (*Prof. Farlow.*) On earth near Nanaimo, Vancouver Island, June 4th, 1887. (*Macoun.*) Yes Bay and Juneau, Alaska. (*Evans.*) Dawson, Yukon. (*Williams.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

54. **N. hæmatosticta**, (NEES) LINDB.

Disenchantment Bay, Hidden Glacier Inlet, St. Lawrence Island, Unalaska and Cape Nome, Alaska. (*Evans.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

55. **N. obovata**, (NEES) LINDB.

On stones at Glacier, Selkirk Mountains, B.C., Aug. 6, 1890. (*Macoun.*) Farragut Bay and Kadiak Island, Alaska. (*Evans.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

56. **N. crenulata**, (SMITH) LINDB.

Greenland. (*J. Vahl.*) On earth by a roadside, near Brackley Point, Prince Edward Island ; on earth at Truro, N.S., June 12th, 1883 ; on earth along roads at Baddeck and Aspy Bay, Cape Breton Island, N.S., July, 1898 ; on earth at Ottawa, Ont., 1883 ; on wet rocks at Yale, Fraser River, B.C. ; on old logs, Stanley Park, Vancouver, B.C. ; on sandstone rocks at Hastings, Burrard Inlet, B.C. ; on earth at Victoria, Vancouver Island, May 7th, 1875 ; on earth along Shawnigan Lake, Vancouver Island, and in a wet cutting of the railway close to that lake. (*Macoun.*)

22. **GYROTHYRA**, M. A. HOWE.57. **G. Underwoodiana**, M. A. HOWE.

On earth in a railway cutting, Hastings, B. C., April 6th, 1889 ; on wet rocks, North Arm, Burrard Inlet, near Hastings, B.C., April 29th, 1889. (*Macoun.*)

23. **PRASANTHUS**, Lindb.58. **P. suecicus**, (GOTTSCHE) LINDB.

Scoresby Sound, Lat. 70° 15', East Greenland. (*C. Janse.*)

24. **ARNELLIA**, Lindb.59. **A. fennica**, (GOTTSCHE) LINDB.

On limestone rocks at the Narrows, Lake Manitoba, June 16th, 1881 ; on earth and logs, Kicking Horse Lake, Rocky Mountains, July 23rd, 1885. (*Macoun.*)

25. **JUNGERMANNIA**, Linn.60. **J. autumnalis**, DC.

Greenland. (*Vahl.*) Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) On logs, Tobique River, N.B. (*Hay.*) On old logs at Pictou and Truro, N.S. ; on old logs, Margaree, Cape Breton Island, N.S., July, 1898 ; on rotten wood at Otter Pond, near Brackley Point, Prince Edward Island ; on logs, Mount Albert, Gaspé Co., Que. ; quite common at Woodstock, N.B., July, 1899 ;

quite common on old logs in Algonquin Park, Ont., June, 1900 ; quite common on dead wood at Ottawa, Ont.; at Belleville, Hastings, Co., Ont.; on old logs, Sudbury Junction, Algoma, Ont.; on logs at Owen Sound, Ont.; on old logs near Lesser Slave Lake, Atha.; on earth at the Cave Mounds, Banff, Rocky Mountains ; quite common on old logs at Revelstoke, Columbia River, B.C.; on logs at Sicamous, Shuswap Lake, B.C.; on rotten logs at Agassiz, B.C.; on logs, near Union Mines, Comox, Vancouver Island. (*Macoun.*)

61. ***J. sphærocarpa***, Hook.

Labrador. Collected by Waghorne. (*Underwood.*) On earth in the vicinity of Victoria, Vancouver Island, May 7th, 1875 ; on wet earth on the shore of Shawnigan Lake, Vancouver Island, May 26th, 1893. (*Macoun.*) Hooniah Village, Disenchantment Bay, and Port Clarence, Alaska. (*Evans.*) Scoresby Sound and Hold-with-Hope, East Greenland. (*C. Jansen.*)

62. ***J. caespiticia***, LINDB.

Cape Nome, Alaska. New to America. (*Evans.*)

63. ***J. amplexicaulis***, DUMORT.

On earth at Hastings, Burrard Inlet, B. C., April 8th, 1889. (*Macoun.*)

64. ***J. cordifolia***, Hook.

Greenland. (*J. Vahl.*) Labrador. Collected by Waghorne. (*Underwood.*) On stones in Jupiter River, Anticosti ; on wet rocks in a brook, Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898 ; on stones in St. Anne des Monts River, Gaspé Co., Que. ; on rocks below Jones Falls, Sydenham River, Owen Sound, Ont., July 26th, 1871 ; on stones in a brook at Hector, Rocky Mountains ; on stones in Eagle River, Griffin Lake, B.C. (*Macoun.*) On wet rocks, Mount Queest, Shuswap Lake, B. C. (*J. M. Macoun.*) Abundant in streams running into Lake Lindeman, B.C., April 9, 1898. (*Williams.*) Alaska. (*Krause.*)

65. **J. riparia**, TAYL.

On stones by a brook at Goldstream, near Victoria and on wet earth at Comox, Vancouver Island, May 3rd, 1887. (*Macoun.*)

66. **J. atrovirens**, DUMORT.

Greenland; Virgin Bay and Unalaska, Alaska. (*Evans.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

67. **J. pumila**, WITH.

On rocks along Meech's Lake, near Chelsea, Que.; on old logs, Seymour West, Northumberland Co., Ont.; on rocks in a brook, Lake Mara, Sicamous, B. C.; on wet rocks at Lytton, Fraser River, B. C., April 17th, 1889; on old logs, Rocky Mountain Cañon, Peace River, Lat. 56°; near McLeod's Lake, Lat. 55°, B. C., June 26th, 1875; on damp rocks, Goldstream, near Victoria, Vancouver Island; on old logs, Union Mines, near Comox, V. I. (*Macoun.*) On earth, Mount Queest, Gold Range, B. C., July, 1889. (*J. M. Macoun.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

68. **J. lanceolata**, LINN.

Lioclæna lanceolata, Nees; Pearson's List, No. 98.

On dead wood, Margaree, Cape Breton Island, N.S., July, 1898; Labrador. Collected by Waghorne. (*Underwood.*) On rotten logs at Belleville, Hastings Co., Ont., June 27th, 1876; on earth in woods, Albert Cañon, Selkirk Mountains, B. C.; on old logs, Sea's farm, near Victoria, Vancouver Island. (*Macoun.*)

26. **ANASTROPHYLLUM**, Stephani.69. **A. Reichardtii**, (GOTTSCHE) STEPH.

Columbia Fiord, Orca, and Port Wells, Alaska. (*Evans.*)

27. **LOPHOZIA**, Dumort.70. **L. incisa**, (SCHRAD.) DUMORT.

Miquelon Island, Gulf of St. Lawrence. (*De à mare.*) On earth and dead wood, Jupiter River, Anticosti; on old logs at Truro,

N.S. ; on old logs, Gaspé Coast, Que. ; on earth and rotten wood at Margaree and Louisburg, Cape Breton Island, N.S., July, 1898 ; on rocks and rotten wood Algonquin Park, Ont., June, 1900 ; on rotten wood at Ottawa, Ont. ; on logs on the borders of swamps at Belleville, Hastings Co., Ont. ; on old logs at Nipigon River, Lake Superior ; on rotten logs, Pic Island, Thunder Bay, Lake Superior ; on old logs in woods at Revelstoke, B.C. , on dead wood, House Mountain, near Lesser Slave Lake, Atha. ; on dead wood, Rocky Mountain Cañon, Peace River, Lat. 56° ; on old logs at Hector, Rocky Mountains ; on dead wood at Roger's Pass, Selkirk Mountains, B.C. ; on old logs west of Fraser River at Quesnel, B. C. ; on rotten wood at Hastings, Burrard Inlet, B.C. ; on old logs at Esquimault, near Victoria, Vancouver Island ; on rotten logs at Comox, Vancouver Island. (*Macoun.*) On Mount Queest, Shuswap Lake, B.C. ; Chilliwack Lake, B.C. (*J. M. Macoun.*) Hot Spring near Sitka, Juneau, Columbia Fiord, Orca, Kadiak Island, Hall Island and Cape Nome, Alaska. (*Evans.*) On *Sphagnum*, Klondike, Yukon, Sept. 18, 1898. (*Williams.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

71. *L. ventricosa*, (DICKS.) DUMORT.

Labrador, collected by Waghorne. (*Underwood.*) On earth, Seal Lake, Labrador, August, 1896. (*A. P. Low.*) Alaska. (*Krause.*) On rotten wood, Jupiter River, Anticosti ; on earth and old logs, common along the Gaspé coast and up Ste. Anne des Monts River, Gaspé Co., Que. ; quite common at Woodstock, N.B., July, 1899 ; on rotten wood and earth at Baddeck, Margaree and Louisburg, Cape Breton, N.S., July, 1898 ; quite common on old logs, Algonquin Park, Ont., June, 1900 ; on old logs, Owen Sound, Ont. ; on rocks, Humboldt Island, Lake Nipigon ; on an old log, Birch Island, Lake Huron, Aug. 26th, 1901 ; on dead wood, Red Rock, Lake Superior ; on House Mountain, near Lesser Slave Lake, Atha., Sept. 19th, 1872 ; on dead wood at Belleville, Hastings Co., Ont. ; on logs at "the gap," Crow's Nest Pass, Rocky Mountains, 1897 ; on earth at Lake Louise, near Laggan, Rocky Mountains ; on old logs, Rocky Mountain Cañon, Peace River, Lat. 56° ; on dead wood, McLeod's Lake, B.C., Lat. 55° ; on rotten wood at Revelstoke, Columbia River, B.C. ; on earth and old logs, Eagle Pass, B.C., and on mountains north

of Griffin Lake, Eagle River, B.C. ; on rocks, Parson's Mountain, near Victoria, and on logs at Union Mines, Comox, Vancouver Island. (*Macoun.*) Vancouver Island. (*Lyall.*) On Mount Queest, Shuswap Lake, B.C. (*J. M. Macoun.*) Juneau, Sitka, Douglas Island, Virgin Bay, Columbia Fiord, Port Wells, Orca, Yakutat Bay, Kadiak Island and Port Clarence, Alaska. (*Evans.*) Popoff Island. (*Townsend.*) St. George Island, Behring Sea and Nagai Island, Shumagin Group, Alaska. (*J. M. Macoun.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

Var. **porphyroleuca**, NEES. (Scarcely a variety.)

On rotten wood along the Gaspé Coast and along Ste. Anne des Monts River, Gaspé Co., Que. ; on old logs at Belleville, Hastings Co., Ont. ; on rocks northeast coast of Lake Superior ; on dry rocks, Lake Nipigon and on Humboldt Island in same lake ; on rocks, Pine Portage, Dawson Route, west of Lake Superior ; on rotten logs at Donald, Columbia River, B.C. ; on rotten wood, mountains north of Griffin Lake, Gold Range, B.C. ; on old logs west of the Fraser River at Quesnel, B.C. ; on dead wood at Hastings, Burrard Inlet, B.C. (*Macoun.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

Var. **longiflora**, NEES. (Scarcely a variety.)

On old logs, coast of Gaspé, Que., August 8th, 1882. (*Macoun.*)

Another variety not yet named, was collected on old logs, Salt Spring Island, Gulf of Georgia, B.C., May 9th, 1887.

72. **L. guttata**, (LINDB. & ARNELL) EVANS.

Point Gustavus, Glacier Bay, Columbia Fiord, and Kadiak Island, Alaska. (*Evans.*)

73. **L. alpestris**, (SCHLEICH.) EVANS ; Collins, Rhodora 3. 181, 1901.

At Godthaab, West Greenland. (*Warming & Holm.*) Summit of Mount Albert, Gaspé Co., Que. ; on stones in brooks, east coast of Lake Superior, July 28th, 1869 ; on rocks, mountain north of Hector, Rocky Mountains ; on rocks in Roger's Pass, Selkirk Mountains, B.C. ; on earth, Mount Mark, Vancouver Island. (*Macoun.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

74. **L. longidens**, (LINDB.)

On wet rocks, Smoky Mountain, Cape Breton Island, N.S., Aug. 3rd, 1898. Mixed with *L. ventricosa*. (*Macoun*.)

75. **L. plicata**, (HARTM.)

Along the sea shore at Upernivak, Greenland. (*Ussing*.)

76. **L. Wertheimii**, (NEES.) STEPH.

Sukkertoppen, Greenland, Aug. 1884. (*Warming & Holm*.)
Scoresby Sound, East Greenland. (*C. Jansen*.)

77. **L. obtusa**, (LINDB.) EVANS.

Juneau, Alaska. (*Evans*.)

78. **L. inflata**, (HUDS.) M. A. HOWE.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare*.) Greenland. (*Vahl*.) Labrador. Collected by Waghorne. (*Underwood*.)
On wet earth and rocks, Smoky Mountain, near Aspy Bay and Louisburg, Cape Breton Island, N.S., July, 1898; very abundant on damp earth near No. II. Station, Sable Island, N.S., Aug. 3, 1899; on boggy ground, summit of Mount Albert, Gaspé Co., Que.; on damp rocks, at the "hole in the wall," Tudor, Hastings Co., Ont., July 13th, 1865; on roots of trees in marshes, northeast coast of Lake Superior, July 27th, 1869; in bogs, Sundance Creek, Banff, Rocky Mountains; on damp rocks, Roger's Pass, Selkirk Mountains, B.C. (*Macoun*.) Kadiak Island, and St. Michael's, Alaska. (*Evans*.) (Scoresby Sound, East Greenland. (*C. Jansen*.)

79. **L. Hornschuchiana**, (NEES.)

In a bog at Lake Louise, near Laggan, Rocky Mountains, Aug. 20th, 1891. (*Macoun*.)

80. **L. capitata**, (HOOK.)

On earth and rotten wood, Roger's Pass, B.C., August 21st, 1885; on earth and rocks on mountains north of Griffin Lake, Gold Range, B.C.; on rotten wood west of Fraser River at Quesnel, B.C. (*Macoun*.)

81. *L. bicrenata*, (SCHMID.) STEPH.

On earth along Lake Nipissing, at North Bay, Algoma, Ont., May 29th, 1884. (*Macoun.*)

82. *L. exoisa*, (DICKS.) STEPH.

Labrador. Collected by Waghorne. (*Underwood.*) On rotten wood at Ottawa, Ont., not rare; on rotten logs at Belleville, Hastings Co., Ont., July 16th, 1867; on logs at Hector, Rocky Mountains; on old logs in woods at Revelstoke, B.C.; on rotten wood, Albert Cañon, Selkirk Mountains, B.C.; on old logs at Quesnel, Fraser River, B.C.; on dead wood, Sea's farm, near Victoria, Vancouver Island. (*Macoun.*)

83. *L. Vahlia*na, (NEES.)

Baals River, Greenland. (*J. Vahl.*)

84. *L. colpodes*, (TAYL.)

North America. [Rocky Mountains.] (*Drummond.*) On old logs west of the Fraser River, at Quesnel, B.C., June 4th, 1875. (*Macoun.*)

85. *L. groenlandica*, (NEES.)

Greenland. (*Brutel & Currie.*)

86. *L. heterocolpa*, (THED.) M. A. HOWE.

Fungermannia Wathiana, Aust. ; Pearson's List No. 110.

Fungermannia Mülleri, Nees, var. *maritima*, Pearson's List No. 119.

On moss on wet rocks above Otter Head, northeast of Lake Superior, July 29th, 1869. (*Macoun.*) Port Wells, Alaska. (*Evans.*) Over rocks and earth on mountain side, Dawson, Yukon, 1898. (*Williams.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

87. *L. Mülleri*, NEES.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) On earth along the Ste. Anne des Monts River, Gaspé Co., Que., Aug. 21st, 2½

1882 ; on earth along the Gaspé Coast, Gaspé Co., Que. ; on a damp spot by a creek in the File Hills, near Qu'Appelle, Assa., July 6th, 1879. (*Macoun.*)

88. **L. Bantriensis**, (Hook.)

On old logs at the Rocky Mountain Cañon, Peace River, Lat. 56°, Oct. 24th, 1872 ; on wet logs at the Union Mines near Comox, Vancouver Island, July 4th, 1893. (*Macoun.*)

89. **L. barbata**, (Schreb.) Dumort.

Greenland. (*Vahl.*) Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) Labrador. Collected by Waghorne. (*Underwood.*) On rocks along Gaspé coast, Que. ; on rocks in damp ravines and by brooks, Cape Breton Island, N.S., July, 1898 ; on rocks in a ravine, Woodstock, N.B., July, 1899 ; on rocks at Chelsea, near Ottawa, Ont. ; on moss on rocks, Sudbury Junction, Algoma, Ont. ; very common on rocks in Algonquin Park, Ont., July, 1900 ; on rocks, Lake Nipigon, and at Current River, Thunder Bay, Lake Superior ; on rocks, North Hastings, Ont. ; on rocks near Devil's Lake, Banff, and at Hector, Rocky Mountains ; on rocks, Pass Creek, Sproat, Columbia River, B.C. ; Roger's Pass, Selkirk Mountains, B.C. ; on earth on rocks, Victoria, Vancouver Island. (*Macoun.*) Klondike River bottom, Yukon, Oct. 9, 1898. (*Williams.*)

90. **L. attenuata**, (Mart.) Dumort.

Labrador. Collected by Waghorne. (*Underwood.*) On old logs at Baddeck and Aspy Bay, Cape Breton Island, N.S., July, 1898 ; on rocks, summit of Mount Albert, Gaspé Co., Que. ; on rocks at Pictou, N.S. ; on rocks at Rockcliffe and Hull, near Ottawa, Ont. ; on damp, perpendicular rocks, Otter Head, Lake Superior, July 29th, 1869 ; on rocks in Roger's Pass, Selkirk Mountains, B.C. ; on old logs at Revelstoke, Columbia River, B.C. ; on damp rocks, Eagle Pass, Gold Range, B.C. (*Macoun.*) Virgin Bay, and Unalaska, Alaska. (*Evans.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

91. **L. quinquedentata**, (Huds.) Cogn.

At Godthaab, West Greenland. (*Warming & Holm.*) Labrador. Collected by Waghorne. (*Underwood.*) On old logs and rocks

in a ravine, Margaree, Cape Breton Island, N.S., July, 1898; on rocks in a ravine at Woodstock, N.B., July, 1899; on earth along the Gaspé coast, Que.; on moss at Sudbury Junction, Algoma, Ont.; on rocks near Otter Head, Lake Superior; common on rocks on islands in Lake Nipigon; on old logs, Duck Bay, Lake Winnipegosis, Man.; on old logs and rocks, Dawson Route, west of Lake Superior; on earth, Lake Louise, near Laggan, and at Hector, Rocky Mountains. (*Macoun.*) St. Matthew Island, Alaska. (*Evans.*) On rocks, Klondike, Yukon, Oct. 10th, 1898. (*Williams.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

92. **L. Flørkii**, (WEB. & MOHR) SCHIFFN.

On rocks at Whale River, Labrador, July 26th, 1896. (*A.P. Low.*) On rocks and earth at Morley and Hector, Rocky Mountains, June 14th and July 29th, 1885; on rocks, Roger's Pass, Selkirk Mountains, B.C.; on rocks at Yale, Fraser River, B.C., May 17th, 1875; on rocks at Nanaimo, on Mount Benson, Mount Mark and Mount Arrowsmith, Vancouver Island. (*Macoun.*) Chilliwack Lake, B.C. (*J. M. Macoun.*) Unalaska, Orca, and Port Wells, Alaska. (*Evans.*) On wet rocks, Lake Lindeman, B.C., May 22nd, 1898. (*Williams.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

Var. **alpina**, PEARSON. (Scarcely distinct.)

On earth on the mountain north of Kicking Horse Lake, Rocky Mountains, B.C. alt. 7,000 feet, July 20th, 1885; on rocks, Moose Mountain, Elbow River, Rocky Mountains, 1897. (*Macoun.*)

Another variety has been reported from Greenland by Currie.

93. **L. lycopodioides**, (WALLR.) COGN.

West Greenland. (*Warming & Holm.*) Fort Chimo and Seal Lake, Labrador, Aug., 1896. (*A. P. Low.*) Labrador. Collected by Waghorne. (*Underwood.*) On rocks, Stupart's Bay, Hudson Strait. (*Dr. R. Bell.*) On rocks at Pirate's Cove, N.S.; on rocks at Campbellton, N.B.; on rocks near Ottawa, Ont.; on rocks, Lake Winnipegosis, Man.; on moss in woods, Hector and Lake Louise, Rocky Mountains; on rocks, McLeod's Lake, B.C.; on stones in Roger's Pass, Selkirk Mountains, B.C.; mountains north of Griffin Lake, Eagle Pass, B.C.; on earth along the Columbia

River at Revelstoke, B.C. (*Macoun.*) Mountains east of Adam's Lake, B.C., alt. 6,300 feet; on rocks, Tulameen Mountains, B.C. (*Dr. G. M. Dawson.*) Very common among bushes, Lake Lindeman, B.C., May 22nd, 1898. (*Williams.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

94. **L. quadriloba**, (LINDB.) EVANS.

Hooniah Village, Alaska. (*Evans.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

95. **L. Kunzeana**, (HÜBEN.)

On rocks on Humboldt Island, Lake Nipigon, Ont.; also in a peat bog by Nipigon River; on rocks at Sudbury Junction, Algoma, Ont.; on rotten wood at Quesnel, Fraser River, B.C.; in bogs between Dunvegan and St. John, Peace River, Athabaska, Oct. 10th, 1872. (*Macoun.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

96. **L. polita**, (NEES). Possibly a form of preceding.

On earth, along the coast, Gaspé Basin, Gaspé Co., Que., July 21st, 1882; on earth at the Asulcan Glacier, Selkirk Mountains, B.C. (*Macoun.*)

97. **L. Michauxii**, (WEB.)

On earth on rocks, Seal Lake, Labrador, July 29th, 1896. (*A. P. Low.*) On rocks, North West Arm, Halifax, N.S.; on logs, Ste. Anne des Monts River, Gaspé Co., Que.; on rotten wood at Belleville, Hastings Co., Ont., July 20th, 1868; on rocks, Lake Nipigon, Ont.; on rocks and rotten wood, Algonquin Park, Ont., June, 1900; on rocks, Dawson Route, west of Lake Superior; on old logs, Revelstoke, Columbia River, B.C. (*Macoun.*)

98. **L. saxicola**, (SCHRAD.) SCHIFFN.

Greenland. (*Vahl.*) On earth in bogs, summit of Mount Albert, Gaspé Co., Que., 26th August, 1882. (*Macoun.*) Alaska. (*Krause.*) On rocks, Klondike, Yukon, Oct. 10th, 1898. (*Williams.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

99. *L. exsecta*, (SCHMID.) DUMORT.

On rocks at South West Point, Anticosti ; on dead wood, Hemlock Lake, Ottawa, October, 1900; on an old log, Algonquin Park, Ont., July 17th, 1900 ; on dead wood, Jumping Pound Creek, Alta., June, 1897 ; on rocks and earth at Morley, Rocky Mountains ; on dead wood west of Fraser River at Quesnel, B.C. (*Macoun.*) North America. (*Drummond.*)

Var. *scituta*, (TAYLOR) PEARSON. (Scarcely distinct.)

New Brunswick. (*Herb. Austin.*) On earth and logs, coast of Gaspé, Que. ; common on dead wood at Ottawa, Ont. ; on rotten wood at Belleville, Hastings Co., Ont. ; on earth and moss, north side of Pic Island, Thunder Bay, Lake Superior ; on old logs, Dog Island, Lake Nipigon ; on old stumps and logs at Revelstoke, B.C. (*Macoun.*)

100. *L. Helleriana*, (NEES.)

On old logs at Belleville, Hastings Co., Ont. ; in woods near Experimental Farm, Ottawa, Ont., April 16th, 1892 ; on old logs at the mouth of Nipigon River, Lake Superior, July 12th, 1869 ; on burnt logs west of the Fraser River, Quesnel, B.C., June 4th, 1875 ; on earth at Pass Creek Falls, near Sproat, Columbia River, B.C. (*Macoun.*)

101. *L. minuta*, (CRANTZ) SCHIFFN.

Labrador. Collected by Waghorne. (*Underwood.*) Holstensborg, Greenland. (*Warming & Holm.*) Nottingham Island, Hudson Strait. (*Dr. R. Bell.*) On wet rocks, Smoky Mountain, Cape Breton Island, N.S., Aug., 1898 ; on rocks Cêche Lake, Algonquin Park, Ont., July, 1900 ; on granite rocks, above Otter Head, Lake Superior, July 29th, 1869 ; on rocks, Sudbury Junction, Algoma, Ont. ; on rocks, Lake Nipigon, Ont. ; on rocks at Hector, Kicking Horse Lake, Rocky Mountains, B.C. ; on rocks, Roger's Pass, Selkirk Mountains, B.C. (*Macoun.*) Chilcoot, Alaska. (*Krause.*) Columbia Fiord, Orca, Hall Island, St. Lawrence Island, Sitka and Popoff Island, Alaska. (*Evans.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

102. **L. ovata**, (DICKS.) M. A. HOWE.

Yakutat Bay, Alaska; in very small quantity. (*Evans.*)

28. **PLAGIOCHILA**, Dumort.103. **P. interruptus**, (NEES) DUMORT.

Greenland. (*Vahl.*) Labrador. Collected by Waghorne. (*Underwood.*) On earth in Dow's Swamp, near Ottawa, Ont.; in water in bogs at Albert Cañon, Selkirk Mountains, B.C.; on wet logs at Quesnel, Fraser River, B.C., June 4th, 1875. (*Macoun.*)

104. **P. asplenioides**, (LINN.) DUMORT.

P. porelloides, (Torrey) Pearson's List No. 91.

On earth, Canaan Forks, Queen's Co., N.B. (*Moser.*) On damp earth and rocks by brooks, Margaree and Half-Way Brook, Cape Breton Island, N.S., July, 1898; on logs at Truro and Yarmouth, N.S., June, 1883; on earth, Cove Head, Prince Edward Island, July, 1888; on earth, Gaspé coast and on gravel along Ste. Anne des Monts River, Gaspé Co., Que., August, 1882; on the margins of brooks at Ottawa and at Meech's Lake, near Chelsea, Que., Sept., 24th, 1893; on earth by brooks at Belleville, Hastings Co., Ont.; on rocks at Owen Sound, Ont.; on rocks in woods, Algonquin Park, Ont., June, 1900; amongst moss and on rocks, Dog Island, Lake Nipigon, Ont.; on clay banks, Queenston Heights, Ont., 1901; on earth, Sudbury Junction, Algoma, Ont.; on damp rocks, Current River, Thunder Bay, Lake Superior; on wet rocks at Banff and Hector, Rocky Mountains; on wet earth, House Mountain, near Lesser Slave Lake, Athabasca, Sept. 20th, 1872; on wet logs, McLeod's Lake, British Columbia, Lat. 55°; on rocks at Donald, B.C.; on wet earth at Revelstoke, Pass Creek and Robson, Columbia River, B.C.; on wet earth at Agassiz and Burrard Inlet, B.C., 1889; on rocks near Victoria, on Mount Arrowsmith and Mount Mark, and at Union Mines, Comox, Vancouver Island. (*Macoun.*) Farragut Bay, Sitka, Yakutat Bay and Unalaska, Alaska. (*Evans.*)

29. **MYLIA**, S. F. Gray.105. **M. Taylori**, (HOOK.) S. F. GRAY.

Greenland. (*Vahl.*) Labrador. Collected by Waghorne. (*Underwood.*) Newfoundland. (*Pearson.*) Miquelon Island, Gulf of

St. Lawrence. (*Delàmare.*) On earth and wet rocks, Pirate's Cove, Canso, N.S.; on logs at Margaree and rocks at Half-Way House, and Louisburg, Cape Breton Island, N.S., July, 1898; on logs subject to inundation, Ste. Anne des Monts River, and on logs in swamps, Mount Albert, Gaspé Co., Que.; in a bog at House Mountain, Lesser Slave Lake, Atha., Sept. 20th, 1872; on old logs in Stanley Park, Vancouver, B.C. (*Macoun.*) Hot Spring, Juneau, Douglas Island, Virgin Bay, Farragut Bay, Orca, Columbia Fiord, Port Wells and Sitka, Alaska. (*Evans.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

106. **M. anomala**, (HOOK.) S. F. GRAY.

In a peat bog at Salt Lake, Anticosti; in a peat bog between Dunvegan and St. John, Peace River, Atha., Lat. 56°, Oct. 16th, 1872; on earth along a brook at Lytton, B.C. (*Macoun.*) On *Sphagnum* at Dawson, Yukon, Aug. 31st, 1898. (*Williams.*)

30. **LOPHOCOLEA**, Dumort.

107. **L. bidentata**, (LINN.) DUMORT.

On rotten logs, Eastman's Springs, 12 miles from Ottawa, Ont.; on old logs vicinity of Victoria, Vancouver Island, May 6th, 1875; on dead wood at Comox, Vancouver Island, April 29th, 1887. (*Macoun.*)

108. **L. minor**, NEES.

On cliffs, Canaan Forks, Queen's Co., N. B. (*Moser.*) On limestone rocks and dead wood in the vicinity of Ottawa, Ont.; on rocks, Carleton Place, Carleton Co., Ont.; among moss on limestone rocks along the Moira at Belleville, Hastings Co., Ont., June 20th, 1867; on limestone rocks, Owen Sound, Ont.; on rocks at Otter Head and Pie Island, Lake Superior; on earth in woods at Revelstoke, Columbia River, B.C.; on earth at Quesnel, Fraser River, B.C.; on rocks, House Mountain, Lesser Slave Lake, Atha. (*Macoun.*)

109. **L. Macounii**, AUST.

On rotten wood along the Gaspé Coast, Gaspé Co., Que.; on rotten wood at Ottawa, Ont.; on rotten logs near Belleville,

Hastings Co., Ont., June 19th, 1866 ; on old logs along Nipigon River, Ont. (*Macoun.*)

110. **L. cuspidata**, (NEES) LIMPR.

On rocks at Hector, Rocky Mountains, B.C., Aug. 14th, 1890 ; on rotten wood, Cedar Hill and Sea's farm, near Victoria, Vancouver Island ; also on *Rubus spectabilis* at Comox, V.I. (*Macoun.*) Cape Fox, Alaska. (*Evans.*)

111. **L. heterophylla**, (SCHRAD.) DUMORT.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) On rotten wood, Brackley Point, Prince Edward Island ; on earth in woods at Baddeck, Cape Breton Island, N.S., July, 1898 ; on logs, Woodstock, N.B., July, 1899 ; on roots of trees, Ste. Anne des Monts River, Gaspé Co., Que. ; on rotten wood quite common at Ottawa, Ont. ; on old logs at Belleville, Hastings Co., Ont. ; on rotten wood, Seymour West, Northumberland Co., Ont. ; common on rocks and old logs, Algonquin Park, Ont., June, 1900 ; on old roads, High Park, Toronto, and at Leamington, Ont., 1901 ; on rotten logs, Hector, Rocky Mountains, B.C. (*Macoun.*)

31. **CHILOSCYPHUS**, Corda.

112. **C. adscendens**, HOOK. & WILSON.

On rotten logs in swamps five miles west of Belleville, Hastings Co., Ont., Sept. 16th, 1867 ; on old logs at Owen Sound, Ont. ; on old logs at Thunder Bay, Lake Superior ; on rotten wood west of Fraser River at Quesnel, B.C. ; on rotten logs at Revelstoke, and in Eagle Pass, west of Revelstoke, Columbia River, B.C. ; on earth at Hastings, Burrard Inlet, B.C. ; on old logs at Comox, Vancouver Island. (*Macoun.*) Kootenay Pass, Rocky Mountains, 1883. (*Dr. G. M. Dawson.*) No doubt some specimens referred here belong to the next species.

113. **C. polyanthos**, (LINN.) CORDA.

Labrador. Collected by Waghorne. (*Underwood.*) Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) On old logs at Truro, N.S. ; on stones in brooks at Margaree and Half-Way House, Cape Breton Island, N.S., July, 1898 ; on wet sand, Sable

Island, N.S., July, 1899; on stones, Otter Slide Brook, Algonquin Park, Ont., July, 1900; on earth amongst moss at Belleville, Hastings Co., Ont., May 20th, 1866; on old logs in wet woods, Jordan Station, Ont., 1901; on earth in a peat bog near New Westminster, B.C.; also on damp logs and earth at Hastings, Burrard Inlet, B.C.; on dead wood in a swamp at Comox, Vancouver Island. (*Macoun.*) Juneau, Port Gustavus, Glacier Bay, Yakutat Bay and Unalaska, Alaska. (*Evans.*)

VAR. *rivularis*, NEES.

On stones in brooks, Canaan Forks, Queen's Co., N.B. (*Moser.*) On rocks, Little Tobique River, N.B. (*Hay.*) On stones in a brook, Brackley Point, Prince Edward Island; on stones in Jupiter River, Anticosti; on stones in Fox River, Gaspé Co., Que., Aug. 2nd, 1882; on stones in a brook, Woodstock, N.B.; July, 1899; in the bed of a brook, Kootenay Lake, B.C.; on stones in a brook at Hastings, Burrard Inlet, B.C.; on logs in Colquitz River, B.C.; on sticks in Sea's swamp, near Victoria, Vancouver Island; on stones in Mill Stream, Nanaimo, V. I.; on sticks in the river at Comox, V.I. (*Macoun.*) Rocks beside rivulets, Cheam Range, north of Chilliwack River, B.C.; Attu Island, Behring Sea. (*J. M. Macoun.*) Salmon Creek, near Juneau, Alaska. (*Miss G. Cooley.*)

32. *HARPANTHUS*, NEES.

114. *H. scutatus*, (WEB. & MOHR) SPRUCE.

Labrador. Collected by Waghorne. (*Underwood.*) Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) On earth on rocks at Margaree, Cape Breton Island, N.S., July, 1898; on old logs at Woodstock, N.B., July, 1899; on old logs, Pirate's Cove, Canso, N.S.; on rotten logs at Ottawa, Ont.; on old logs and rotten wood at Belleville, Hastings Co., Ont., May 24th, 1865; on rotten wood, Sudbury Junction, Algoma, Ont.; on rotten wood along Lake Superior and at the mouth of the Nipigon River; on earth and mosses at Hector, Rocky Mountains, July 21st, 1885. (*Macoun.*)

115. *H. Flotowianus*, NEES.

Greenland. (*Pearson.*) Labrador. Collected by Waghorne. (*Underwood.*) Rocky Mountains. (*Bourgeau.*) Mountains of the

Gold Range, north of Griffin Lake, B.C., alt. 7,500 ft., Aug. 4th, 1889. (*Macoun.*) Hot Springs, Orca, Port Wells and Yakutat Bay, Alaska. (*Evans.*)

33. **GEOCALYX**, Nees.

116. **G. graveolens**, (SCHRAD.) NEES.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) On earth in woods, Margaree, Cape Breton Island, N.S., July, 1898; on old logs, Jupiter River, Anticosti; on dead wood and earth, Pirate's Cove, Canso, N.S.; on earth at Truro, N.S.; on earth along the Gaspé coast, Gaspé, Co., Que.; on earth and dead wood at Ottawa, Ont., and Hull, Que.; on earth and rotten wood at Belleville, Hastings Co., Ont.; old logs, Seymour west, Northumberland Co., Ont.; on old logs in woods, Jordan Station, Ont., 1901; on old logs, Red Rock, Nipigon, Lake Superior; on rotten logs at Hector, Rocky Mountains, B.C.; on rotten wood at Quesnel, Fraser River, B.C., 1875; on rotten wood at Goldstream, near Victoria, Vancouver Island; on earth at Comox, Vancouver Island. (*Macoun.*) Dawson, Yukon, Aug. 31st, 1898. (*Williams.*)

34. **CEPHALOZIA**, Dumort.

117. **C. curvifolia**, (DICKS.) DUMORT.

On rotten logs, quite common in the east.

On rotten logs, Fredericton, N.B. (*Prof. Fowler.*) Along Jupiter River, Anticosti; by Otter Pond, near Brackley Point, Prince Edward Island; Pirate's Cove, Canso, N.S.; abundant on dead wood at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; Mount Albert and along Ste. Anne des Monts River, Gaspé Co., Que.; in woods at Ottawa, Ont.; common at Belleville, Hastings Co., Ont., July 20th, 1867; on Pelee Island, Lake Erie and at Owen Sound, Ont.; quite common on old logs in Algonquin Park, Ont., June, 1900. (*Macoun.*)

118. **C. media**, LINDB.

C. multiflora, Spruce; Pearson's List, Can. Hep. p. 9.

On rotten wood, very common from the Atlantic to the Pacific.

Labrador. Collected by Waghorne. (*Underwood.*) Miquelon Island, Gulf St. Lawrence. (*Delàmare.*) South West Point and St. Mary's River, Anticosti; on rotten wood and peat, Cape

Breton Island, N.S., July, 1898; Pirate's Cove, Canso, N.S.; surface of a bog and on dead wood, Otter Pond, Prince Edward Island; very common on dead wood around Ottawa, Ont.; common at Belleville, Hastings Co., Ont., June 16th, 1865; North Bay, Lake Nipissing, Algoma; very common on old logs, Algonquin Park, Ont., June, 1900; on shaded, moist, perpendicular rocks, Otter Head, Lake Superior; on earth in a swamp, Nipigon River and on rotten wood, Thunder Bay, Lake Superior; on old logs, Hector, Rocky Mountains; on earth and old logs, Lake Louise, and on rotten wood at Lake Agnes, Laggan, Rocky Mountains; on old logs and stumps at Revelstoke, Columbia River, B.C.; on earth in the Eagle Pass, B.C.; on earth, at Sicamous, B.C.; on rotten wood at Quesnel, Fraser River, B.C.; on rotten wood at Hastings, Burrard Inlet, B.C.; on old logs on Cedar Hill, Goldstream and Parson's Mountain, near Victoria and on rotten wood at Comox, Vancouver Island. (*Macoun.*) On old logs, Chilliwack Lake, B.C. (*J. M. Macoun.*) Douglas Island, Orca, Columbia Fiord, Farragut Bay and Yakutat Bay Alaska. (*Evans.*) Salmon Creek, near Juneau, Alaska. (*Miss G. Cooley.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

119. **C. catenulata**, (HÜBEN) LINDB.

On rotten wood, Otter Pond, Prince Edward Island; on old logs, Baddeck, Cape Breton Island, N.S., July 8th, 1898; on rotten wood at Truro, N.S.; on old logs along the Gaspé coast and along the Ste. Anne des Monts River, Gaspé Co., Que.; on old logs at Ottawa, Ont., on burnt logs, Sudbury Junction, Algoma; on rotten wood at Belleville, Hastings Co., Ont., 1867; not rare on old logs in Algonquin Park, Ont., June, 1900; shores of Lake Superior, 1869; on old logs, Peace River, Lat. 56°; on rotten logs, Quesnel, Fraser River, B.C., 1872 and 1875; on rotten wood, Salt Spring Island Gulf of Georgia, B.C.; on rotten wood, Cedar Hill and Goldstream, near Victoria and at Comox, Vancouver Island. (*Macoun.*)

120. **C. bicuspidata**, (LINN.) DUMORT.

C. Lammersiana, Pearson's List, No. 39.

C. extensa, Pearson's List, No. 40.

Greenland. (*Vahl.*) Labrador. Collected by Waghorne. (*Underwood.*) Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*)

On earth at Rustico, Brackley Point and Black River, Prince Edward Island ; on earth at Jupiter River, Anticosti ; on rotten wood, earth and rocks, Cape Breton Island, N.S., July, 1898 ; on earth, Pirate's Cove, N.S., July, 1883 ; on rotten wood at Ottawa, Ont. ; on rotten logs in a swamp near railway station, Belleville, Ont., May 16th, 1869 ; on earth, White Trout Lake, Algonquin Park, Ont., July 18th, 1900 ; on earth, North Bay, Lake Nipissing, Algoma ; on rotten wood, Roger's Pass, Selkirk Mountains, B.C., Aug. 24th, 1885 ; on earth, Eagle Pass, B.C., 1889 ; mountains north of Griffin Lake, B.C., 1889 ; quite common on old logs at Hastings, B.C., April, 1889 ; Mount Finlayson, near Victoria ; on old logs at Shawnigan Lake, at Sea's farm, Victoria, and very common at Goldstream, Vancouver Island ; on dead wood at Comox, Vancouver Island. (*Macoun.*) Mount Queest, Shuswap Lake, B.C. (*J. M. Macoun.*) Sitka, Mt. Versovia, Juneau, Hidden Glacier Inlet, Orca, Columbia Fiord, Farugut Bay, Yakutat Bay, Kadiak Island and Attu Island, Alaska. (*Evans.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

121. *C. pleniceps*, (AUST.) LINDB.

On rotten wood and on stones in woods at Ottawa, Ont. ; on moss near the snow line (alt. 7,500 feet) at Hector, Rocky Mountains ; on rotten wood at Cedar Hill, Victoria, and on old logs at Nanaimo, Vancouver Island. (*Macoun.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

122. *C. fluitans*, (NEES) SPRUCE.

Labrador. Collected by Waghorne (*Underwood.*) Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) Floating in water in a *Sphagnum* swamp, Salt Lake, Anticosti, Aug. 10th, 1883 ; in a peat bog at Brulé Lake, Algonquin Park, Ont., June 13th, 1900 ; in a peat bog near New Westminster Junction, B.C. (*Macoun.*)

123. *C. divaricata*, (SMITH) DUMORT.

In wet places, Greenland. (*Dr. Rosenvinge.*) Labrador. Collected by Waghorne. (*Underwood.*) On damp rocks at Yar-

mouth, N.S., June 24th, 1882; on damp rocks, Sudbury Junction, Algoma; on damp rocks, Otter Head, Lake Superior, July 28th, 1869; on rocks, Nipigon River, Ont.; on wet rocks, House Mountain, Lesser Slave Lake, Atha.; on rocks, Parson's Mountain, Cedar Hill, and Sea's farm, near Victoria, Vancouver Island; at Comox, V.I. (*Macoun.*) On stones, Mount Queest, Shuswap Lake, B.C. (*J. M. Macoun.*) Cascade Mountains, British Columbia. (*Lyall.*) Unalaska, Alaska. (*Evans.*) Scoresby Sound and Hold-with-Hope, East Greenland. (*C. Jansen.*)

124. *C. Macounii*, AUST.

On rotting logs of *Ulmus Americana*, in Barlow's swamp, Belleville, Hastings Co., Ont., May 20th, 1865; on dead wood, Michipicoten Island, Lake Superior; on old logs, Roger's Pass, Selkirk Mountains, B.C.; at Revelstoke, Columbia River, B.C. (*Macoun.*)

125. *C. Sullivantii*, AUST.

On old elm logs in swamps east of Belleville, Hastings Co., Ont., May 11th, 1866. (*Macoun.*)

126. *C. minima*, AUST.

Growing on rotten wood and old logs in swamps at Belleville, Hastings Co., Ont., May, 1868. (*Macoun.*)

127. *C. dentata*, (RADDI) LINDB.

Galton Mountains, British Columbia. (*Lyall.*)

128. *C. leucantha*, SPRUCE.

Columbia Fiord, Alaska. (*Evans.*)

85. *HYGROBIELLA*, Spruce.

129. *H. laxifolia*, (HOOK.) SPRUCE.

Near Lichenfels, Greenland. (*Vahl.*) Labrador, "Camp 3," Aug. 21st, 1896. Collected by Prof. Atkinson. (*Evans.*)

36. **ODONTOSCHISMA**, Dumort.130. **O. sphagni**, (Dicks.) DUMORT.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) On the surface of a bog at Louisburg, Cape Breton Island, August, 1898; on old pine logs at Belleville, Hastings Co., Ont., May 10th, 1866. (*Macoun.*) In a swamp at Dawson, Yukon, Sept. 8th, 1898. (*Williams.*)

131. **O. denudatum**, (NEES) DUMORT.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) On rotten logs, Baddeck, Cape Breton Island, N.S., July, 1898; at Pirate's Cove, N.S., 1883; on pine stumps at Belleville, Hastings Co., Ont., June 16th, 1866; on a pine log in Beechwood, Ottawa, Ont. (*Macoun.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

132. **O. Macounii**, Austr.

Cephalozia Austini, Pearson's List Can. Hep. p. 10.

On earth and amongst the roots of *Scripus caespitosus* 25 miles north of Michipicoten and near Otter Head, Lake Superior, July 28th, 1869. (*Macoun.*)

37. **KANTIA**, S. F. Gray.133. **K. Trichomanis**, (LINN.) S. F. GRAY.

Labrador. Collected by Waghorne. (*Underwood.*) Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) Along the Tobique River, N.B. (*G. U. Hay.*) On old logs, Canaan Forks, Queen's Co., N.B. (*Moser.*) On rotten wood at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; on rotten wood along Jupiter River, Anticosti; on earth and old logs, Gaspé Basin, Gaspé Co., Que.; on dead wood at Ottawa, Ont., and at the Cascades, Gatineau River, Que.; at Carleton Place, Carleton Co., Ont.; on old logs, Lake Nipissing, Algoma; on old logs and stumps at Belleville, Hastings Co., Ont., June 16th, 1865; on earth, Lake Louise, near Laggan, Rocky Mountains; on earth and rotten wood at Revelstoke, Columbia River, B.C.; on old logs at Hastings, Burrard Inlet, B.C.; on logs at Comox and Victoria, Vancouver

Island. (*Macoun.*) On logs, Port Etches, Lat. 60°, Alaska. (*J. M. Macoun.*) Douglas Island, Orca, Columbia Fiord, Farragut Bay, Sitka, and Yakutat Bay, Alaska. (*Evans.*)

38. **BAZZANIA, S. F. Gray.**

134. ***B. trilobata*, (LINN.) S. F. GRAY.**

Newfoundland. (*Hb. Le Jolis.*) On mossy logs, Hamilton farm, River Rouge, Argenteuil Co., Que. (*D'Urban.*) On old logs, North West Arm, Halifax, and on rocks at Truro, N.S.; on old logs and stumps, Baddeck and Margaree, Cape Breton Island, July, 1898; on rocks, Jupiter River, Anticosti; on stumps, Brackley Point, Prince Edward Island; on old logs, Gaspé Co., Que.; on old logs at Ottawa, Ont.; on logs and stumps in swamps at Belleville, Hastings Co., Ont.; in swamps at Owen Sound, Ont.; on old logs, North Bay, Lake Nipissing, Algoma; on old logs, Lake Nipigon, Ont.; quite common on old stumps in Algonquin Park, Ont., July, 1900. (*Macoun.*) Along the Tobique River, N.B. (*Hay.*)

135. ***B. triangularis*, (SCHLEICH.) LINDB.**

On damp rocks, Louisburg, Cape Breton Island, August, 1898; on rocks, Pirate's Cove, Canso, N.S., July 7th, 1883; on rocks in wet woods, Roger's Pass, Selkirk Mountains, B.C.; on old logs at Revelstoke, Columbia River, B.C.; on earth in a bog at New Westminster, B.C.; on earth and rotten wood at Hastings, Burrard Inlet, B.C.; on rotten wood at Union Mines and Comox, Vancouver Island. (*Macoun.*) Chilliwack, Lake, B.C., 1901. (*J. M. Macoun.*) On Bartledown Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*) Chilcat, Alaska. (*Krause.*) Hot Spring, Wrangel, Juneau, Port Wells, Farragut Bay, Loring, and Sitka, Alaska. (*Evans.*)

136. ***B. denudata*, (TORREY) S. F. GRAY.**

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) This species has been referred to *Bazzania deflexa* Nees, by Austin. (*Pearson.*) My specimens from Nova Scotia referred to *B. triangularis* may be this species, or this may be a form of *B. triangularis*. (*Macoun.*)

39. **PLEUROCLADA.**187. **P. albescens**, (Hook.) Spruce.

Greenland. (*Vahl.*) Kobbefjord, near Goethaab, Greenland, 1884. (*Warming & Holm.*) On earth on the Gold Range, north of Griffin Lake, B.C., alt. 7,500 feet, Aug. 7th, 1889. (*Macoun.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

188. **P. Islandica**, (NEES)

Northern Greenland, Lat. 64°, May 24th, 1888. (*Dr. Rosenvinge.*)

40. **LEPIDOZIA**, Dumort.189. **L. reptans**, (LINN.) DUMORT.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) On rotten wood, Brackley Point, Prince Edward Island; on rotten wood, Jupiter River, Anticosti; on old logs, Truro, N.S.; on earth at Baddeck, Cape Breton Island, N.S., July 9th, 1898; on old logs Ste. Anne des Monts River, Gaspé Co., Que.; on old logs at Ottawa, Ont.; on old stumps and logs, Cliche Lake Algonquin Park, Ont., June 7th, 1900; on old logs, North Bay, Lake Nipissing, Algoma; on rocks, Humboldt Island, Lake Nipigon; on old logs, Manitoba House, Lake Manitoba, Man.; on old logs, House Mountain, Lesser Slave Lake, Athabasca; on logs at Hector and Jumping Pound Creek, Rocky Mountains; on old logs at Revelstoke, Columbia River, B.C.; on rotten wood at Hastings, Burrard Inlet, B.C.; on old logs near Victoria and at Comox, Vancouver Island. (*Macoun.*) On dead wood, Alert Bay, Vancouver Island. (*Dr. G. M. Dawson.*) Chilliwack Lake, B.C. (*J. M. Macoun.*) Sitka, Douglas Island, Orca, and Yakutat Bay, Alaska. (*Evans.*)

140. **L. filamentosa**, (LEHM. & LINDB.) LINDB.

On old logs, Prince of Wales Island, Alaska, Sept. 29th, 1891. (*J. M. Macoun.*) Sumdum, Alaska, 1895. (*Miss Jessie Trowbridge.*) Douglas Island, Columbia Fiord and Farragut Bay, Alaska. (*Evans.*)

141. *L. setacea*, (WEB.) MITT.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) Orca, and Columbia Fiord, Alaska. (*Evans.*)

41. *BLEPHAROSTOMA*, Dumort.142. *B. trichophyllum*, (LINN.) DUMORT.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) Labrador. Collected by Waghorne. (*Underwood.*) On old logs, Jupiter River, Anticosti; on earth, Pirate's Cove, Canso, N.S.; wet earth, Aspy Bay, Cape Breton Island, N.S., Aug., 1898; at the base of trees at Yarmouth, N.S.; on old logs along the Gaspé coast, and on Mount Albert, Gaspé Co., Que., alt. 4,000 feet; on earth and logs, Ste. Anne des Monts River and Mont Louis, Gaspé Co., Que.; on earth and rotten wood, Brackley Point, Prince Edward Island; on rotten wood, stones and earth at Ottawa, Ont.; on earth, Sudbury Junction, Algoma; on rocks, earth and logs in Algonquin Park, Ont., July, 1900; on rotten wood at Belleville, Hastings Co., Ont.; on the face of moist rocks in woods, Otter Head, Lake Superior, July 28th, 1869; on old logs, Nipigon River, and on Humboldt Island, Lake Nipigon; on old logs, Manitoba House, Lake Manitoba, Man.; on House Mountain, near Lesser Slave Lake, Atha.; on earth and dead wood at Hector, and Elbow River, Rocky Mountains; on logs, Roger's Pass, Selkirk Mountains, B.C.; on rotten wood at Revelstoke, Columbia River, B.C.; on rotten wood at Quesnel, Fraser River, B.C.; on dead wood, Hastings, Burrard Inlet, B.C. (*Macoun.*) On Mount Queest, Shuswap Lake, B.C., alt. 6,000 feet. (*J. M. Macoun.*) Juneau, Orca, Yakutat Bay, Hall Island and Unalaska, Alaska. (*Evans.*) On river bank below Bonanza Creek, Yukon, June 18th, 1899. (*Williams.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

143. *B. setiformis*, (EHRH.) LINDB.

Chandonanthus setiformis, (Ehrh.) Mitt.; Pearson List, Can. Hep. p. 13.

Greenland. (*Vahl.*) On the earth in a swamp, summit of Mount Albert, Gaspé Co., Que., alt. 4,000 feet, Aug. 26th, 1882. (*Macoun.*)

3½

Observatory Inlet, N.W. coast of America. (*Dr. Scouler.*) Alaska. (*Krause.*) On rocks, Lake Lindeman, Yukon, May 5th, 1898 (*Williams.*) On St. Matthew Island, Alaska. (*Evans.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

42. **ANTHELIA**, Dumort.

144. **A. julacea**, (LINN.) DUMORT.

Greenland. (*Vahl.*) On wet rocks, Asulcan Glacier, Selkirk Mountains, B.C., Aug. 7th, 1890. (*Macoun.*) Virgin Bay, St. Matthew Island, St. Lawrence Island, Hall Island and Unalaska, Alaska. (*Evans.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

145. **A. juratzkana**, (LIMPR.) TREVIS.

St. Matthew Island and Hall Island, Alaska. (*Evans.*) Hold-with-Hope and Scoresby Sound, East Greenland. (*C. Jansen.*)

43. **HERBERTA**, S. F. Gray.

146. **H. adunca**, (DICKS.) S. F. GRAY.

St. Paul Island, Behring Sea, Alaska. (*Dr. Merriam.*) Yes Bay and Hall Island, Alaska. (*Evans.*)

44. **PTILIDIUM**, Nees.

147. **P. ciliare**, (LINN.) NEES.

Alaska. (*Krause.*) Miquelon Island, Gulf of St. Lawrence. (*Delamare.*) Greenland, Lat. 60° 30'. (*Dr. Rosenvinge.*) Barren Grounds, Lat. 62° 30', Long. 102° 45'. (*J. W. Tyrrell.*) Fort Chimo and Clearwater Lake, Labrador, July, 1896. (*A. P. Low.*) On Digge's and Nottingham islands, Hudson Strait. (*Dr. R. Bell.*) On old logs, Tobique River, N.B., July, 1884. (*G. U. Hay.*) Peat bog, Salt Lake, Anticosti; at Margaree and Baddeck, Cape Breton Island, 1898; on rotten wood, Brackley Point, Prince Edward Island; on earth, Gaspé Co., Que., Aug. 10th, 1882; on old logs at Ottawa, Ont.; on rotten wood, Belleville. Hastings Co., Ont.; on dead wood, North Bay, Lake Nipissing, Algoma; on perpendicular rocks, Lake Nipigon; on old logs, Algonquin

Park, Ont., July, 1900; on old logs at Manitoba House, Lake Manitoba, Man.; on rocks, Kicking Horse Lake and Elbow River, Rocky Mountains; on old logs at Revelstoke, Columbia River, B.C.; also at Sicamous, Shuswap Lake, B.C. (*Macoun.*) On logs Chilliwick Lake, B.C.; Kadiak Island, Alaska. (*J. M. Macoun.*) Juneau, Virgin Bay, Port Wells, Kadiak Island, St. Matthew Island, Port Clarence, Unalaska and St. Michael's Alaska. (*Evans.*) On ground in woods, Dawson, Yukon, Sept. 7th, 1898. (*Williams.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

148. ***P. pulcherrimum***, (WEB.) HAMPE.

On logs, Gaspé Co., Que., Aug. 10th, 1882. (*Macoun.*) Scarcely distinct from *P. ciliare*.

149. ***P. Californicum***, (AUST.) PEARSON, List Can. Hep. p. 7.

On branches, twigs and trunks, in Eagle Pass, B.C.; on rocks, Hector, Rocky Mountains, B.C.; on logs in woods at Hastings, Burrard Inlet, B.C.; on the base of trees and on rotten logs, Sea's farm, Victoria, 1875; on rocks, Mount Benson, Nanaimo, and on old logs, Union Mines, near Comox, Vancouver Island. (*Macoun.*) On old logs, Carmanah Bay, Vancouver Island; Prince of Wales Island, Alaska, Oct. 1st, 1891. (*J. M. Macoun.*) Sitka, Virgin Bay, Port Wells, Orca and Columbia Fiord, Alaska. (*Evans.*)

45. **TRICHOCOLEA**, Dumort.

150. ***T. tomentella***, (EHRH.) DUMORT.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) At Hamilton Farm, River Rouge, Argenteuil Co., Que. (*D'Urban.*) In moss in Dow's swamp, Ottawa, Ont.; at Meech's Lake, north of Chelsea, Que.; in tamarac and black ash swamps, Belleville, Hastings Co., Ont.; in boggy woods, Cliche Lake, Algonquin Park, Ont., June 9th, 1900. (*Macoun.*)

46. **DIPLOPHYLLLEIA**, Trevis.

151. ***D. albicans***, (LINN.) TREVIS.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) On earth at Pictou, Nova Scotia, July 24th, 1883; crevices of wet rocks,

Margaree and Half-Way Brook, Cape Breton Island, N.S., 1898 ; on damp rocks in a ravine, Woodstock, N.B., July, 1899 ; on rocks northeast coast of Lake Superior, July 27th, 1869 ; on rocks, Roger's Pass, Selkirk Mountains, B.C. ; on rocks, Mount Benson, Nanaimo, Vancouver Island ; near the summit of Mount Arrow-smith, alt. 5,500 feet, Vancouver Island. (*Macoun.*) Rocky Mountains (*Bourgeau.*) Queen Charlotte Islands, B.C. (*Law.*) St. Paul Island, Behring Sea, and Carmanah, west coast of Vancouver Island, 1892. (*J. M. Macoun.*) Hot Springs, Mount Verstovia, Orca, Columbia Fiord, Port Wells, Farragut Bay and Barlow Cove, Alaska. (*Evans.*)

152. *D. latifolia*, (WAHL.) TREVIS.

Labrador. Collected by Waghorne. (*Underwood.*) On moss and rocks. Pictou Cove, Canso, N.S., July 9th, 1883 ; wet rocks, Smoky Mountain and Half-Way Brook, Cape Breton Island, N.S., 1898 ; on rocks, Ste. Anne des Monts River, Gaspé Co., Que. ; on rocks, Burnt Portage, Dawson Route, west of Lake Superior, July 24th, 1872 ; on wet rocks at Revelstoke, Columbia River, B.C. ; mountains of the Gold Range, north of Griffin Lake, B.C. ; on rocks at Peace River Cañon, Lat. $56^{\circ} 12'$, Oct. 24th, 1872 ; on rocks, Mount Benson, and in brooks, Nanaimo, Vancouver Island. (*Macoun.*) On damp rocks, Carmanah, west coast of Vancouver Island, 1892, and on St. Paul Island, Behring Sea, 1891. (*J. M. Macoun.*) St. Matthew Island, Unalaska Island, Cape Nome and Sitka, Alaska. (*Evans.*) On rocks, Cañon City, Alaska, March 27th, 1898. (*Williams.*) Unalaska. (*Chamisso.*)

153. *D. argentea*, (TAYL.)

Observatory Inlet, northwest coast of America. (*Dr. Scouler.*) Northwest coast of America, 1791. (*Menzies.*) Forward Bay, Johnston's Strait, Gulf of Georgia, B.C., 1885. (*Dr. G. M. Dawson.*)

154. *D. obtusifolia*, (HOOK.) TREVIS.

On earth under stumps at Hastings, Burrard Inlet, B.C., April 11th, 1889 ; on earth under a stump in woods, at Revelstoke, Columbia River, B.C. (*Macoun.*)

155. *D. plicata*, (LINDB.) EVANS.

Orca, Farragut Bay and Hall Island, Alaska. (*Evans.*)

47. *SCAPANIA*, Dumort.156. *S. Bolanderi*, AUST.

On logs and stones, Pirate's Cove, Canso, N.S.; on rocks at Truro, N.S.; on stones in brooks near Ottawa, Ont.; on logs in swamps, Sudbury Junction, Algoma; on rocks near Michipicoten, northeast coast Lake Superior; on trees at Hastings, Burrard Inlet, B.C.; on rocks Mount Erskine, Salt Spring Island, Gulf of Georgia, B.C.; on rocks and trees near Victoria, on trees at Nanaimo, on rocks, Mount Arrowsmith and Mount Mark, and on trees at Comox, Vancouver Island. (*Macoun.*) On logs, Alert Bay, Vancouver Island, and Hanson Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*) On logs, Chilliwack Lake, B.C.; Port Etches, Alaska, May 18th, 1892; Prince of Wales Island, 1891. (*J. M. Macoun.*) Sitka, Hot Spring, Mt. Verstovia, Juneau, Douglas Island, Orca, Columbia Fiord, Farragut Bay and Kadiak Island, Alaska. (*Evans.*) Chilcat, Alaska. (*Krause.*)

157. *S. nemorosa*, DUMORT.

S. subalpina, Pearson, List Can. Hep., p. 15.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) On stones, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Digge's Island, Hudson Strait. (*Dr. R. Bell.*) On earth, Jupiter River, Anticosti; on wet earth by roadsides and on rocks by streams, Cape Breton Island, N.S., July, 1898; not rare on Sable Island, N.S., July, 1899; on old logs, Mount Albert, Gaspé Co., Que.; on rotten wood by a brook, Meech's Lake and Cascades, Que., near Ottawa, Ont.; on flat rocks, Addington Co., Ont.; on rocks in damp places, Algonquin Park, Ont., June, 1900; on rocks, borders of brooks, opposite Michipicoten Island, Lake Superior; on damp rocks, House Mountain, Lesser Slave Lake, Atha.; on rocks by a brook, Roger's Pass, Selkirk Mountains, B.C.; on rocks in a brook at Revelstoke, Columbia River, B.C.; in wet woods at Hastings, Burrard Inlet, B.C.; on damp rocks at Goldstream and Parson's Mountain, near Victoria, Vancouver Island; on Mount

Arrowsmith, Vancouver Island, alt. 4,800 feet. (*Macoun.*) British Columbia. (*Lyall.*) Alaska. (*Krause.*) Reported from Alaska by Rothrock.

158. *S. Oakesii*, AUST.

Observatory Inlet, northwest coast of America. (*Dr. Scouler.*) Northeast coast, Lake Superior, July 28th, 1869. (*Macoun.*)

159. *S. undulata*, (LINN.) DUMORT.

On earth, Seal Lake, Labrador, July, 1896. (*A. P. Low.*) Labrador. Collected by Waghorne. (*Underwood.*) Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) Greenland, Lat. 63° 20', May 27th, 1888. (*Dr. Rosenvinge.*) On rocks, Canaan Forks, Queen's Co., N.B. (*Mover.*) On wet earth, Point de Roche, Prince Edward Island; on rocks in a brook at Halifax and at Yarmouth, N.S.; on stones in flowing water at Baddeck, Margaree, Half-Way Brook and Louisburg, Cape Breton Island, N.S., July, 1898; in the bed of a brook, Mount Albert, Gaspé Co., Que.; in a small brook near the lower end of Michipicoten Island, northeast coast Lake Superior, July 26th, 1869; on earth along the Columbia River at Revelstoke, B.C.; on stones, Roger's Pass, Selkirk Mountains, B.C.; wet rocks near Griffin Lake, Gold Range, and on rocks at Yale, B.C.; in bogs near New Westminster, B.C.; near the summit of Mount Arrowsmith, Vancouver Island, alt. 5,500 feet. (*Macoun.*) On stones in brooks, Tulameen River, B.C. (*Dr. G. M. Dawson.*) Rocky Mountains. (*Lyall.*) Observatory Inlet, northwest coast of America. (*Dr. Scouler.*) Sitka, Juneau, Virgin Bay, Orca, Columbia Fiord, Farragut Bay, Yakutat Bay, Unalaska and Popoff Island, Alaska. (*Evans.*) St. Paul Island, Behring Sea, 1892. (*J. M. Macoun.*) In streams running into Lake Lindeman, Yukon, 1898. (*Williams.*)

160. *S. uliginosa*, (SW.) DUMORT.

Greenland. (*J. Vahl.*) On stones in brooks, Roger's Pass and along Asulcan Creek, Selkirk Mountains, B.C.; on stones in Eagle River, Griffin Lake, B.C., and on the Gold Range north of that point; on Mount Arrowsmith, near the summit, Vancouver Island. (*Macoun.*) On wet rocks, Carmanah Bay, Vancouver Island; Attu Island and St. Paul Island, Behring Sea. (*J. M. Macoun.*)

161. *S. irrigua*, (NEES) DUMORT.

On earth by roadsides, Brackley Point, Prince Edward Island ; on wet earth by springs at Truro, N.S. ; on boggy ground summit of Mount Albert, alt. 4000 feet, Gaspé Co., Que. ; on stones in brooks northeast coast of Lake Superior ; along Peace River, Rocky Mountain Cañon, Lat. $56^{\circ} 12'$, Oct. 24th, 1872 ; by springs at Quesnel, Fraser River, B.C. (*Macoun.*) Port Clarence, Alaska. (*Evans.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

162. *S. umbrosa*, (SCHRAD.) DUMORT.

S. convexa, (Scop.) Pearson, List Can. Hep. p. 15.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) On old logs, Sea's farm, and at Parson's bridge near Victoria ; on old logs at Goldstream, on rotten wood, Mount Mark, and on old logs at Comox, Vancouver Island. (*Macoun.*) Sitka, Mt. Verstovia, Juneau, Orca, Columbia Fiord and Yakutat Bay, Alaska. (*Evans.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

163. *S. imbricata*, M. A. HOWE, Bull. New York Bot. Gar.

Vol. II., 104, 1901.

On rocks, Crater Lake, at foot of Chilcoot Pass, Alaska, alt. about 900 metres, May 24th, 1898. (*Williams.*)

164. *S. curta*, (MART.) DUMORT.

On earth, South West Point, Anticosti ; on earth along Ste. Anne des Monts River, Gaspé Co., Que. ; on old logs at Ottawa, Ont. ; on slate rocks 10 miles south of Fort William, Lake Superior, July 16th, 1869 ; on rocks, Nipigon River, and Lake Nipigon, Ont. ; on old logs, Sudbury Junction, Algoma, Ont. ; on earth, House Mountain, Lesser Slave Lake, Atha. (*Macoun.*) Unalaska Island. (*Chamisso.*) Yakutat Bay, Unalaska and St. Michael's, Alaska. (*Evans.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

165. *S. gracilis*, (LINDB.) KAALAAS.

On rocks by a brook, Big Intervale, Margaree, Cape Breton Island, N.S., July 14th, 1898. (*Macoun.*) Scoresby Sound, East Greenland. (*C. Jansen.*)

166. *S. brevicaulis*, TAYL.

North America. (*Drummond* in herb. Hook.)

167. *S. glaucocephala*, (TAYL.) AUST.

On dead wood, Gaspé coast, and slopes of Mount Albert, alt. 4,000 feet, Gaspé Co., Que.; on elm and other logs at Ottawa, Ont.; on old logs at Belleville, Hastings Co., Ont.; on old logs, very rare, near Wooler, Northumberland Co., Ont., July 20th, 1865; on old logs, Manitoba House, Lake Manitoba, Man.; on old logs west of Fraser River at Quesnel, B.C., 1875. (*Macoun.*)

168. *S. compacta*, (ROTH) DUMORT.

Greenland. (*Currie & Brentel.*)

48. *RADULA*, Dumort.169. *R. complanata*, (LINN.) DUMORT.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) On the bases of trees, Jupiter River, Anticosti; on the bases of trees, Ste. Anne des Monts River, Gaspé Co., Que.; on rocks and trees at Ottawa, Ont.; on the roots of trees and on stones at Belleville, Hastings Co., Ont.; on rocks and trees, Queenston Heights, Ont., 1901; on rocks, Lake Nipigon, Ont.; abundant on the bases of trees in Algonquin Park, Ont., July, 1900; on trees, Red Deer River, Porcupine Mountains, Man.; on bases of trees and alders at Revelstoke, B.C.; on rocks, New Westminster, B.C.; on trees, Sea's farm, Victoria, Vancouver Island; on rocks and trees, Mount Benson, Nanaimo, Vancouver Island; on rocks and the bases of trees, Cape Breton Island, N.S., July, 1898; on the bases of trees, Roger's Pass, Selkirk Mountains, B.C., July 30th, 1890. (*Macoun.*) Sitka, Unalaska Island and Yakutat Bay, Alaska. (*Evans.*)

Radula Krausei, Steph., from Chilcoot, Alaska, is doubtfully referred here by Dr. Howe.

170. *R. Bolanderi*, GOTTSCHKE.

On rotten wood, Alert Bay, Vancouver Island, 1885. (*Dr. G. M. Dawson.*) On *Acer circinatum* at Hastings, Burrard Inlet, B.C.;

on Douglas Fir and other young trees at Victoria, and on *Alnus rubra* at Comox, Vancouver Island. (*Macoun.*) Hot Spring, Unalaska and Sitka, Alaska. (*Evans.*)

Radula arctica, Steph., collected at Chlowak and Chilcat, Alaska, by the Drs. Krause, is referred here by Dr. Howe.

171. *R. tenax*, LINDB.

On the bark of trees, Alert Bay, Vancouver Island, 1885. (*Dr. G. M. Dawson.*)

49. *PORELLA*, Dill.

172. *P. navicularis*, (LEHM & LINDB.) LINDB.

Observatory Inlet, British Columbia. (*Dr. Scouler.*) Vancouver Island. (*Dr. Lyall.*) Chilcoot, Alaska. (*Krause.*) On trees at Hastings, Burrard Inlet, B.C.; quite common on boulders in woods, on rocks, on old logs, and on trees in swamps at Victoria and on trees at Comox, Vancouver Island; on trees and rocks, Salt Spring Island, Gulf of Georgia; and on rocks at Yale, Fraser River, B.C. (*Macoun.*) On trees, Alert Bay, Vancouver Island. (*Dr. G. M. Dawson.*) Hot Spring, Alaska. (*Evans.*)

173. *P. platyphylla*, (LINN.) LINDB.

A very common species throughout eastern Canada.

At the base of trees, Canaan Forks, and Never's Rapids, Queen's Co., N.B. (*Moser.*) On rocks, North West Arm, Halifax, N.S.; on trees at Yarmouth, N.S.; on rocks and trunks at Margaree, Cape Breton Island, N.S., July, 1898; on trees at Grand Etang, Gaspé Co., Que.; on trees at Ottawa, Ont.; on rocks at Sudbury Junction, Algoma; on trees and rocks at Belleville, Hastings Co., Ont.; on rocks at Owen Sound, Ont.; Nipigon River, Ont.; on trees, Queenston Heights, Ont., 1901; on trees in woods, Cliche Lake, Algonquin Park, Ont., June 6th, 1900. (*Macoun.*) On trees, River Rouge, Argenteuil Co., Que. (*D'Urban.*) On Missinaibi River, Algoma. (*Dr. R. Bell.*) Guissen, Alaska. (*Krause.*)

174. *P. rivularis*, (NEES) TREVIS.*P. platyphloidea*, Pearson's List, No. 20.

On wet rocks, Moose Mountain, Elbow River, alt. 6,000 feet, Rocky Mountains, July, 1897; on rocks, Selkirk Mount and in Roger's Pass, B.C., 1890; on trees along the Fraser River, near Mission, B.C.; on rocks at Yale, Fraser River, B.C., 1872; on damp rocks, Eagle Pass, and on rocks at Revelstoke, and Robson, Columbia River, B.C.; on stones in the Colquitz River and on young firs near Victoria, Vancouver Island. (*Macoun.*) Sitka, and Yakutat Bay, Alaska. (*Evans.*)

175. *P. Roellii*, STEPH., Bot. Centralb. 45, 1891.

On rocks, Pass Creek, Robson, B.C., June, 1890; on damp rocks in a ravine at Craigflower, near Victoria, and on rocks near the waterworks, Victoria, Vancouver Island, May 30th, 1893; on rocks on the summit of Mount Benson, near Nanaimo, Vancouver Island, June 8th, 1887; on rocks, Salt Spring Island, and at Nanaimo River, Vancouver Island, May, 1887; on rocks above Yale, B.C., May 17th, 1875. The latter specimen was referred to *P. laevigata* by Pearson, but after reading Dr. Howe's remarks in his work on the Hepatics of California we place it under this species. (*Macoun.*) On wet cliffs, Chilliwack River, B.C., 1901. (*J. M. Macoun.*)

176. *P. pinnata*, LINN.

On stones in Trent River, below Heely Falls, Northumberland Co., Ont.; on stones in a creek, Mr. Roy's farm, near Owen Sound, Ont.; on stones in brooks, Kakabeka Falls, west of Fort William, Lake Superior; on stones in Bonnechère River, Golden Lake, Renfrew Co., Ont.; on the bases of trees subject to flood, shore of Lake Duchesne, above Britannia, near Ottawa, Ont., Oct. 27th, 1900. (*Macoun.*)

50. *LEJEUNEA*, Libert.177. *L. cavifolia*, (EHRH.) LINDB.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) On cedar trees, Ste Anne des Monts River, Gaspé Co., Que.;

on moss and rocks along the right bank of the Moira, below the paper-mill dam, Belleville, Hastings Co., Ont.; on rocks at C  che Lake, Algonquin Park, Ont., July 12th, 1900. (*Macoun.*)

178. **L. patens**, LINDB.

On damp rocks, Big Intervale, Margaree, Cape Breton Island, N.S., July 20th, 1898. (*Macoun.*)

51. **COLOLEJEUNEA**, Schiffn.

179. **C. Biddlecomi  **, (AUST.) EVANS.

On cedar trees in Dow's swamp, Ottawa, Ont., Sept. 21st, 1889 ; on cedar trees in woods east of Belleville, Hastings Co., Ont., Sept. 17th, 1870. (*Macoun.*)

180. **C. Macounii**, (SPRUCE.) EVANS.

On the bark of *Acer circinatum* and other small trees at Hastings, Burrard Inlet, B.C. April 8th, 14th, and 20th, 1889. (*Macoun.*)

52. **FRULLANIA**, Raddi.

181. **F. Oakesiana**, AUST., Proc. Acad. Phila. 1869, 226.

On balsam fir and black ash trees at Baddeck, Cape Breton Island, N.S., July 9th, 1898. (*Macoun.*) Apparently not rare in that locality.

182. **F. Bolanderi**, AUST.

F. Hallii, Aust. ; Pearson, List Can. Hep. p. 2.

We have two specimens in our herbarium collected on May 7th, 1875, at Victoria, Vancouver Island, one of which was named *F. Hallii* by Austin and the other *F. Oakesiana*. Both are placed here. Other specimens were collected on dead *Spir  a discolor*, *Pyrus rivularis* and Douglas fir on Sea's farm, near Victoria, Vancouver Island, May, 1893 ; on small trees at Hastings, Burrard Inlet, B.C., April 26, 1889 ; on rocks, Deer Park, Arrow Lake, Columbia River, B.C., June 8th, 1890. (*Macoun.*)

183. **F. Eboracensis**, GOTTSCHÉ.

Very common on trees, sometimes on rocks.

On fir trees, Jupiter River, Anticosti; on birch and small ash trees at Truro, N.S.; on trees of various kinds, quite common, Cape Breton Island, N.S., July, 1898; on trees, Brackley Point and Cove Head, Prince Edward Island; at Woodstock, N.B., July, 1899; on fir and birch trees, Ste. Anne des Monts River, Gaspé Co., Que.; on bark of various trees at Ottawa, Ont.; on trees, Leamy's Lake, Hull, Que.; abundant at Belleville, Hastings Co.; on beech trees, Seymour West, Northumberland Co.; Sudbury Junction, Algoma; on rocks, Lake Nipigon, Ont.; on trees, Queenston Heights, Ont., 1901; common in Algonquin Park, Ont., August, 1900; on trees, Red Deer River, Porcupine Mountains, Man.; on trees at Hector, Rocky Mountains, B.C.; on trees, Cedar Hill, near Victoria, Vancouver Island. (*Macoun.*)

184. **F. Virginica**, GOTTSCHÉ.

On bark of trees, apparently rare in Canada.

New Brunswick. (*James.*) Near Belleville, Hastings Co., Ont., 1868; on old trees in James Terrill's woods, near Wooler, Ont., Oct. 16th, 1893. (*Macoun.*)

185. **F. Chilcootiensis**, STEPH.

Chilcoot, Alaska. (*Krause.*)

186. **F. Asagrayana**, MONT.

On trees and rocks, frequent in Canada.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) Charlottetown, Prince Edward Island. (*James.*) On trees, Tobique River, N.B. (*Hay.*) Bass River, Kent Co., N.B. (*Prof. Fowler.*) On birch trees, Gaspé Co., Que.; on balsam fir, Baddeck, Cape Breton Island, N.S., July, 1898; on fir trees at Woodstock, N.B., July 4th, 1899; on trees at Truro, N.S.; on rocks in Gull Lake, Frontenac Co., Ont.; on rocks, Sudbury Junction, Algoma, Ont.; not uncommon on tree trunks at Cûche Lake, Algonquin Park, Ont., June, 1900. (*Macoun.*)

187. **F. Californica**, (AUST.) EVANS.

F. Asagrayana, Mont. var. *Californica*, Aust.; Pearson,
List Can. Hep. p. 3.

On trees and rocks on the Pacific coast; on trees at Hastings, Burrard Inlet, B.C., April, 1889; on rocks, Parson's Mountain and on trees at Victoria, Nanaimo and Comox, Vancouver Island, 1893. (*Macoun.*)

188. **F. tamarisci**, (LINN.) DUMORT.

Miquelon Island, Gulf of St. Lawrence. (*Delàmare.*) Newfoundland. (*Waghorne.*) On rocks, Margaree, Cape Breton Island, N.S., July 22nd, 1898. The west coast form referred here in Pearson's list belongs to the next species. (*Macoun.*)

189. **F. Nisquallensis**, SULLIV.

On bark of young Douglas fir and other trees at Victoria; on the bark of yellow cedar Mount Mark, Qualicum, and on alder trees at Comox, Vancouver Island; on trees at Hastings, Burrard Inlet, B.C.; on rocks at Yale, B.C., May, 1889. (*Macoun.*) On trees at Carmanah, west coast of Vancouver Island, May 18th, 1892. (*J. M. Macoun.*) Chilcoot, Alaska. (*Krause.*) Cape Fox, New Metlakahtla, Sitka, Hot Springs, Wrangel, Orca and Yakutat, Alaska. (*Evans.*)

190. **F. Franciscana**, M. A. HOWE.

Sitka and Hot Springs, Alaska. (*Evans.*) This species will likely be found on Vancouver Island or indeed may now be included in *F. Californica*.

191. **F. Selwyniana**, PEARSON, List Can. Hep., p. 1, 1890.

This is a small reddish-brown species collected on the bark of *Thuja occidentalis*, near the mouth of Ste. Anne des Monts River, Gaspé Co., Que., Aug. 19th, 1882. (*Macoun.*) Not collected since in Canada but has been found in Ohio by Mr. W. C. Werner.

ORDER V. ANTHOCEROTACEÆ.

53. **ANTHOCEROS**, Linn.192. **A. laevis**, LINN.

On wet banks, Canada. (*Underwood*.) Very abundant along the Bonnechère, below the hotel at Golden Lake, Ont., Sept. 26th, 1900; on an old road in woods, Arner, Essex Co., Ont., August 6th, 1901. (*Macoun*.)

193. **A. punctatus**, LINN.

Wet banks, Canada. (*Austin*.) On wet earth at Truro N.S., July, 10th, 1883. (*Macoun*.)

194. **A. fusiformis**, AUST.

On earth by the sides of ditches at Hastings, Burrard Inlet, B.C.; quite common by ditches and in wet places on mountains at Goldstream, Nanaimo and Victoria, Vancouver Island, (*Macoun*.) On earth, Alert Bay, Vancouver Island. (*Dr. G. M. Dawson*.) Observatory Inlet. (*Scouler*.)

195. **A. stomatifer**, AUST.

On earth on the slope of the mountain at Sproat, Columbia River, B.C., June 24th, 1890; on earth in Stanley Park, Vancouver, B.C., Aug. 25th, 1893; on wet earth above Yale, Fraser River, B.C., May 17th, 1875. (*Macoun*.)

196. **A. Macounii**, Howe; Bull. Torr. Bot. Club, Vol, XXV pp. 19, 20.

Thallus forming small dark green rosettes, 4-10 mm. in diameter, strongly undulate, crisped, subradiately inciso-laciniate or somewhat broadly lobed, rugose, pitted sometimes, slightly lamellate, ecostate, 6-8 cells in axile parts, cavernose, becoming at the margin gradually 3 or 2-stratose, now and then glandular-thickened; surface-cells distinct, translucent, lightly protuberant, subrhombic, trapegoidal, or oblong-pentagonal.

Abundant on earth subject to flood in spring, near the head of the discharge of Leamy's Lake, Hull, Que., October 6th, 1889. Not since collected. (*Macoun*.)

LICHENES.

TRIBE I.—PARMELIACEI.

FAMILY I. USNEEI.

1. **RAMALINA**, Ach.

1. **R. reticulata**, (NOEHD.) KREMPELH.

This is a common species on *Quercus Garryana* in the neighbourhood of Victoria, Vancouver Island. Many of the specimens are much elongated and hang in festoons from the trees. (*Macoun.*) On trees, Henslow Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*)

This is a very remarkable species and as far as known does not extend north of Henslow Island, Gulf of Georgia. The reticulations are much larger in southern specimens.

2. **R. calicaris**, (LINN.) FR. var. **fraxinea**, FR.

Not uncommon on fence-rails, trees, &c. Distinguished by its wide and long-lobed thallus. Apothecia lateral.

Rather rare in woods at Big Intervale, Cape Breton Island, N.S., 1898; on balsam fir, Stittsville, near Ottawa, Ont., May, 1897; fence-rails at Belleville and Brighton, Ont.; on trees, Lake Nipigon, Ont.; on oak trees at Comox, Vancouver Island. (*Macoun.*) Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On spruce trees and a board fence, Edmonton, Ont. (*James White.*)

Var. **fastigiata**, (PERS.) FR.

Branches compressed and inflated, without soredia. Lobes of thallus crowded. Apothecia terminal or subterminal.

Not uncommon on old fences, old logs and trunks in woods at Ottawa, Belleville and Brighton, Ont.; on trunks, Algonquin Park, Ont., 1900; on oak trees at Comox, Vancouver Island. (*Macoun.*) On spruce trunks at Edmonton, Ont. (*J. White.*)

Var. *canaliculata*, FR.

Lobes narrow and channelled. Apothecia attached just below the deflexed tips.

On trees throughout the eastern provinces; but rare.

On trees, New Brunswick. (*Prof. Fowler.*) At Truro, Nova Scotia; Gaspé Peninsula, Quebec; in the vicinity of Ottawa, Ont.; Algonquin Park, Ont., June, 1900; along the Nipigon River, Ont.; near Kananaskis Falls, Rocky Mountains. (*Macoun.*)

Var. *farinacea*, SCHAEER.

Thallus either flattened or rounded, generally much branched and finally attenuate; besprinkled with white powdery soredia; apothecia rare. Apparently the commonest form of the species. Common on both trees and rocks.

L'Anse au Clair, Labrador. (*Waghorne.*) On trees, Salt Lake, Anticosti; on rocks and trees, Rivière Ste. Anne des Monts, Gaspé, Que.; on trees, Brackley Point, Prince Edward Island; on old fences, Sable Island, N.S., July 27th, 1899; on trees and rocks, Big Intervale, on rocks at Louisburg, and on trees at Grand Narrows and Baddeck, Cape Breton Island, N.S.; on rocks and trees near Ottawa, Ont.; on rocks, Algonquin Park, Ont., June, 1900; on trees at Belleville, Ont.; on rocks, Thunder Bay, Lake Superior; on rocks Lake Athabasca; on trees, Hastings, Burrard Inlet, B.C.; Victoria and Comox, Vancouver Island. (*Macoun.*) Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On trees, Alert Bay and Thurlow Island, Vancouver Island. (*Dr. G. M. Dawson.*) On trees near Cape Beale, Vancouver Island. (*J. M. Macoun.*)

3. *R. minuscula*, NYL.

R. pusilla, (Prev.) var. *geniculata*, Tuckerm.

On trees and branches; not rare.

Canada. (*A. T. Drummond.*) Arctic America. (*Hooker.*) Abundant on trees at the Big Intervale, Margaree River, Cape Breton Island, N. S.; near Ironsides on the road to Chelsea, Que.; on small trees, and branches, Lake Nipigon, Ont.; on small trees, Hastings, Burrard Inlet, B.C.; on willows, Burnside Road, Victoria, Vancouver Island. (*Macoun.*)

4. *R. dilacerta*, HOFFM.

R. minuscula, f. *pollinariella*, NYL.

Eagle River, L'Anse au Mort, and Blanc Sablon, Labrador; on branches of trees, Middle Arm, Newfoundland. (*Waghorne.*)

5. *R. pollinaria*, (WESTR.) ACH.

Bay of Exploits, Newfoundland. (*Waghorne.*) Unalaska Island, Behring Sea. (*J. M. Macoun.*)

6. *R. polymorpha*, ACH.

Quite common on trees in the Maritime Provinces.

On rocks, Newfoundland. (*D. spreaux.*) On dead balsam fir at Baddeck, Big Intervale and Louisburg, Cape Breton Island, N. S.; Jupiter River, Anticosti; Brackley Point, Prince Edward Island; Little Chlorodorme, Gaspé Co. Que.; on old fence posts and boards Sable Island, N. S., July 27, 1899. (*Macoun.*) On islands in Behring Strait. (*Wright.*) On rocks St. Paul Island, Behring Sea. (*J. M. Macoun.*)

7. *R. cuspidata*, ACH.

A specimen referred here was collected on St. Paul Island, Behring Sea, Aug 18th, 1892, by Mr. J. M. Macoun. The plant is perfectly smooth, polished and shining. There is no sign of soredia and the apothecia is lateral. (No. 615.) On June 19, 1897, other specimens were collected on St. Paul Island by Mr. Macoun and referred here by Prof. Branth.

2. *CETRARIA* (ACH.) FR.

8. *C. tristis*, (WEB.) FR.

Alpine rocks. Arctic America. (*Richardson.*) On rocks, Digge's Island, Hudson Strait, 1885. (*Dr. R. Bell.*) On rocks, summit of

Mount Benson, Vancouver Island (*Macoun.*) Muir Glacier, Alaska, July 13th, 1897. (*T. Kincaid.*)

9. **C. Californica**, TUCKERM.

On trees on the summit of Mount Benson, Vancouver Island, alt. 3,300 feet. (*Macoun.*)

10. **C. aculeata**, (SCHREB.) FR

On earth and growing over mosses in alpine districts.

Greenland. (*Arct. Man.*) Arctic America. (*Hooker.*) Clearwater Lake, Labrador. (*A. P. Low.*) On rocks near Halifax, N. S. ; on eastern end of Cypress Hills, Assa. ; on rocks and earth along the Milk River, Assa., near Kenneday's Crossing ; in Crow's Nest Pass and along Jumping Pound and Bragg's creeks, Rocky Mountains ; Bow River Pass, Kananaskis Pass and Devil's Lake, Rocky Mountains ; on rocks Roger's Pass, Selkirk Mountains, B.C. ; on Stewart's Lake Mountain, B.C. ; on mountains at Spence's Bridge, B.C. ; on rocks Burnside Road, Victoria, and on Mount Arrowsmith, Vancouver Island. (*Macoun.*) On the Barren Grounds, Lat. $62^{\circ} 50'$, Long. $102^{\circ} 45'$, W. (*J. B. Tyrrell.*) St. Paul Island, Behring Sea. (*J. M. Macoun.*)

11. **C. odontella**, ACH.

Growing over mosses on rocks in Arctic America. (*Tuckerman.*) Greenland. (*Arct. Man.*) On rocks at Clearwater Lake, Labrador, July 12th, 1896. (*A. P. Low.*) On earth in Lat. $61^{\circ} 30'$, Long. $103^{\circ} 30'$, W., July 26, 1893. (*J. B. Tyrrell.*)

12. **C. ramulosa**, (HOOK.) TUCKERM.

Growing over mosses on alpine rocks.

Arctic America. (*Richardson.*) Rocky Mountains. (*Herb. Hooker.*) Digge's Island, Hudson Strait. (*Dr. R. Bell.*) Summit of Mount Niblock near Lake Agnes, Rocky Mountains. (*Macoun.*)

13. **C. madreporiformis**, (ACH.) MÜLL.

On earth in alpine districts.

On mountains in Bow River Pass, Rocky Mountains, 1879 ; on earth, summit of Sulphur Mountain Banff, alt. 7,500 ft., 1891 ;

along Bragg's Creek, Elbow River, Rocky Mountains, 1897, alt. 5,000 feet. (*Macoun.*) The latter specimens have been referred to var. *muricata* by Dr. Branth.

14. **C. arctica**, (Hook.) TUCKERM.

Greenland. (*Arct. Man.*) Clearwater Lake and Whale River, Labrador, 1896. (*A. P. Low.*) Bear Lake and elsewhere in Arctic America. (*Richardson.*) Cape Prince of Wales, Digge's Island and Upper Savage Islands, Hudson Strait. (*Dr. R. Bell.*) Barren Grounds, Lat. $62^{\circ} 45'$, Long. 103° , W. (*J. W. Tyrrell.*) Summit of Mount Niblock, Lake Agnes, Rocky Mountains. (*Macoun.*) Emerald Lake, south of Laggan, Rocky Mountains, alt. 5,500 ft. (*Bean.*) St. Paul Island, Behring Sea, 1891. (*J. M. Macoun.*)

15. **C. Islandica**, (Lind.) Ach.

On earth in many places throughout the mountains and cooler parts of Canada.

Western Greenland. (*Warming.*) Greenland. (*Arct. Man.*) On earth, Baffin Land, north of Hudson Strait, 1896; North Bluff, Hudson Strait. (*Dr. R. Bell.*) Barren Grounds, Lat. 61° , Long. 104° , W. (*J. W. Tyrrell.*) Mount Albert, Gaspé Co., Que.; Mount Stewart, Prince Edward Island; on Bruce Peninsula, at Little Eagle Harbour, Ont., August, 1901; quite common along the north and east shores of Lake Superior; on earth in woods, Banff, Mount Aylmer, Devil's Lake and Hector, Rocky Mountains; in Roger's Pass, Selkirk Mountains, B. C.; common on the mountains at the head of the Elbow River and in the Crow's Nest Pass, Rocky Mountains; mountains at Spence's Bridge, B. C.; Gold Range at Griffin Lake and above the Sky Line Mine, Kootenay Lake, B. C.; on earth at Comox, Vancouver Island. (*Macoun.*) On Todd Mountain and on mountains south of Tulameen River, B. C. (*Dr. G. M. Dawson.*) Cape Vancouver and St. Paul Island, Behring Sea. (*J. M. Macoun.*)

Var. **crispa**, (Ach.)

On earth in alpine and sub-alpine districts.

Greenland. (*Arct. Man.*) At the Summit Lake, Manicouagan River, Que. and Whale River, Labrador. (*A. P. Low.*) Battle Har-

bour, Labrador. (*Waghorne.*) On earth Half-Way House, Cape Breton Island, N.S., August, 1898; on earth, Salt Lake, Anticosti, Aug. 10th, 1883. (*Macoun.*)

Var. **robusta**, (BRANTH)

St. Paul Island, Behring Sea, July 2nd, 1897. (*J. M. Macoun.*)

16. **C. hiascens**, (FR.) TH. FR.

Greenland. (*Arct. Man.*) Arctic America. (*Herb. Hooker.*) Newfoundland. (*Despreaux.*) North Shore of Lake Superior. (*Agassiz.*) Nottingham Island and Digge's Island, Hudson Strait; on Baffin Land, north shore of Hudson Strait, July, 1897. (*Dr. R. Bell.*) On earth, L'Anse au Mort and west of Woodside, Newfoundland. (*Waghorne.*) Barren Grounds, Lat. $61^{\circ} 25'$, Long. $103^{\circ} 30'$, W. (*J. W. Tyrrell.*) On earth, Salt Lake, Anticosti; summit of Mount Albert, Gaspé Co., Que. (*Macoun.*) Middleton Island, Alaska, and St. Paul Island, Behring Sea. (*J. M. Macoun.*)

17. **C. Richardsonii**, (HOOK.) TUCKERM.

Prostrate on the ground.

Barren Grounds, north of Great Slave Lake. (*Richardson.*) On the Barren Grounds near Chesterfield Inlet, Hudson Bay, Aug. 1893. (*J. W. Tyrrell.*)

18. **C. cucullata**, (BELL.) ACH.

On earth in alpine and sub-alpine districts.

Greenland. (*Arct. Man.*) Arctic America. (*Richardson.*) Marble Island, Hudson Bay; Digge's Island, Hudson Strait. (*Dr. R. Bell.*) L'Anse au Mort, Labrador, and Chimney Cove, Newfoundland. (*Waghorne.*) Barren Grounds, Lat. $62^{\circ} 50'$, Long. $102^{\circ} 05'$, W. (*J. W. Tyrrell.*) Summit of Mount Albert, Gaspé Co., Que.; Sulphur Mountain, Banff and at the source of the Elbow River, Rocky Mountains. (*Macoun.*) On earth, St. Paul Island, Behring Sea. (*J. M. Macoun.*)

19. **C. nivalis**, (LINN.) ACH.

On earth in alpine and sub-alpine districts.

Greenland. (*Arct. Man.*) Arctic America. (*Richardson.*) Mansfield Island, Hudson Bay and Nain, Labrador; on earth, Baffin

Land, north of Hudson Strait, 1896. (*Dr. R. Bell.*) L'Anse au Loup, Labrador; and Chimney Cove, Newfoundland. (*Waghorne.*) Clearwater Lake and Whale River, Labrador, July, 1896 and 1898. (*A. P. Low.*) Barren Grounds, Lat. $62^{\circ} 03'$, Long. $103^{\circ} 15'$, W. (*J. B. Tyrrell.*) Parry Falls, Great Slave Lake, May 15th, 1900. (*J. W. Tyrrell.*) Fort Good Hope, Mackenzie River. N. W. T. (*R. G. McConnell.*) Thirty miles north of Arctic Circle on Peel River. (*Miss E. Taylor.*) Summit of Mount Albert, Gaspé Co., Que.; on the east end of Cypress Hills, Assa.; Bow River Pass, and on earth in woods at Banff and at the source of the Elbow River, Rocky Mountains. (*Macoun.*) Crow's Nest Pass, Rocky Mountains; on mountains south of Tulameen River and on Todd Mountain, B.C. (*Dr. G. M. Dawson.*) St. George and St. Paul islands, Behring Sea. (*J. M. Macoun.*)

20. **C. Fahlunensis**, (LINN.) SCHÆR.

Arctic America. (*Richardson.*) Newfoundland. (*Despreaux.*) On rocks, Tadousac, and on Owl's Head, Lake Memphremagog, Que. (*A. T. Drummond.*) Clearwater Lake, Labrador, July 12th, 1896. (*A. P. Low.*) On rocks, Bald Mountain, Tobique, N. B. (*Geo. U. Hay.*) On rocks, summit of Mount Albert, Gaspé Co., Que.; on rocks, Cache Lake, Algonquin Park, Ont., July, 1900; on rocks above Michipicoten, northeast shore of Lake Superior; summit of Mount Benson, near Nanaimo, Vancouver Island. (*Macoun.*)

21. **C. commixta**, (NYL.) TH. FR.

On St. Paul Island, Behring Sea, June 28th, 1897. (*J. M. Macoun.*)

22. **C. ciliaris**, (ACH.) TUCKERM.

Quite common on fence-rails, branches of spruce, tamarac and balsam trees, and occasionally on tree-trunks.

On birch trees, Canaan Forks, N.B. (*J. Moser.*) On trees at Salt Lake, Anticosti; on tamarac in a swamp, Brackley Point, Prince Edward Island; at Baddeck, Louisburg, Big Intervale and Half-Way Brook, Cape Breton Island, N.S.; on birch trees, Ste. Anne des Monts, Gaspé Co., Que.; common on fence-rails, stumps and trees at Ottawa, Belleville, Brighton and Peterboro,

Ont. ; on branches of trees in swamps, Algonquin Park, Ont., July, 1900 ; near Sudbury Junction and along the north shore of Lake Superior ; Lake Nipigon and westward to the Porcupine Mountains, Man. (*Macoun.*)

23. *C. platyphylla*, TUCKERM.

Not uncommon on trees at Victoria, and on Mount Benson, Vancouver Island. (*Macoun.*)

24. *C. sæpincola*, (EHRH.) ACH.

On trees, twigs and dead wood.

Arctic America. (*Richardson.*) Hudson Bay. (*Herb. Banks.*) On bark of *Betula* at Clearwater Lake, Labrador, 1896. (*A.P. Low.*) Greenland. (*Arct. Man.*) On twigs in the Mer Bleue, near Ottawa, Ont. ; on *Betula pumila*, Lake Nipigon, Ont. ; on twigs and bark of Douglas fir, Deer Park, Lower Arrow Lake, Columbia River, and on *Larix occidentalis* at "Sky Line" Mine, Hot Springs, Kootaney Lake, B.C. ; at McLeod's Lake, B.C., Lat. 55° ; on trees, Burnside Road, Victoria, Vancouver Island. (*Macoun.*) Northwest Coast. (*Menzies.*)

Var. *chlorophylla*, WAHL.

L'Anse au Clair Bay, Labrador. (*Waghorne.*) On dead spruce trees, Jumping Pound Creek, Rocky Mountains, 1897 ; on dead trunks, Telegraph Trail, west of Quesnel, B.C., 1875 ; on old fences at Burrard Inlet, B.C., 1889. (*Macoun.*) On trees on Thurlow Island, Gulf of Georgia, B.C., 1885. (*Dr. G. M. Dawson.*)

25. *C. lacunosa*, ACH.

On trees and fence-rails, not rare.

On trees, Bald Mountain, Tobique River, N.B., 1884. (*G. U. Hay.*) On trees, Canaan Forks, Queen's Co., N.B., 1889. (*J. Moser.*) On trees, Jupiter River, Anticosti, 1883 ; on old fence-rails at Buckingham, Que., 1896 ; on fence-rails at Belleville, Ont., 1868 ; on trees, Nipigon River, Lake Superior, 1884 ; abundant on trees, Algonquin Park, Ont., June, 1900 ; on trees, Johnstone Harbour, Bruce Peninsula, Ont., Aug., 1901 ; on trees at Hastings, Burrard Inlet, B.C., 1889. (*Macoun.*) On dead cedars, Alert Bay, Van-

couver Island, and on Thurlow Island, Gulf of Georgia, B.C., 1885. (*Dr. G. M. Dawson.*) On St. George, St. Paul and Unalaska islands, Behring Sea, 1897. (*J. M. Macoun.*)

26. **C. glauca**, (LINN.) ACH.

On trees and rocks.

Newfoundland. (*Despreaux.*) White Bear River, Sandwich Bay, Newfoundland. (*Waghorne.*) On trees at Truro, N.S., 1883; on rocks at Louisburg; and on trees at Baddeck, Big Intervale and at Half-Way Brook, Cape Breton Island, N.S., 1898; on birch trees, Skickshock Mountains, Gaspé Co., Que., 1882; on trees, Ste. Anne des Monts River, Que., 1882; on trees along the Nipigon River, Lake Superior, Ont., 1884; on spruce trees, Jumping Pound Creek, and Devil's Lake, Rocky Mountains; on trees at Deer Park, Arrow Lake, Columbia River; Cêche Creek, Revelstoke and Clinton, B.C.; on trees and rocks at Victoria, Nanaimo and Comox, Vancouver Island. (*Macoun.*) Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*) On trees at Alert Bay, Vancouver Island. (*Dr. G. M. Dawson.*) On trees at Sitka, Alaska. (*J. M. Macoun.*)

Var. **stenophylla**, TUCKERM.

On old logs, Burnside Road near Victoria; on trees at Qualicum and Nanaimo, Vancouver Island. (*Macoun.*) On trees Thurlow Island, Gulf of Georgia. (*Dr. G. M. Dawson.*) On the Sumas Prairie, B.C., 1859. (*Dr. Lyall.*)

27. **C. chrysantha**, TUCKERM.

On rocks, Kotzebue Sound. (*Tuckerman.*) On islands of Behring Strait. (*Wright.*)

28. **C. Oakesiana**, TUCKERM.

On trees and pine stumps in woods.

On the north shore of Lake Superior. (*Agassiz.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On bark of trees, North Bay, Lake Nipissing, 1884; on a pine stump in Rockcliffe Park, Ottawa, and at Stittsville, Carleton Co., Ont.; on a pine log, King's Mountain, Chelsea, Que.; abundant on the bases of hemlock and pine trees, Algonquin Park, Ont., June, 1900. (*Macoun.*)

29. *C. aurescens*, TUCKERM.

On spruce trees, North Bay, Lake Nipissing, Ont. Determined by Tuckerman. (*Macoun*.) On Middleton Island, Alaska, June 15th, 1892. (*J. M. Macoun*.)

30. *C. juniperina*, (LINN.) ACH.

On trees, especially conifers.

Greenland. (*Arct. Man.*) On bark of Douglas fir, Deer Park, Lower Arrow Lake, Columbia River, B.C.; on spruce trees, Nachaco River, northern British Columbia; Mount Erskine, Salt Spring Island, Gulf of Georgia, B.C. (*Macoun*.)

Var. *terrestris*, SCHÆR.

On earth in alpine districts.

Arctic America. (*Herb. Hooker*.) On the summit of Mount Albert, alt. 4,000 feet, Gaspé Co., Que., 1882; abundant in the Rocky Mountains in the Bow River Pass, at Banff, at Kananaskis and Hector, on Moose Mountain and in the Crow's Nest Pass (*Macoun*.)

Var. *Pinastri*, ACH.

On trees, shrubs and rocks in sub-alpine or cool districts.

Arctic America. (*Richardson*.) Newfoundland. (*Waghorne*.) On spruce bark, Canaan Forks, Queen's Co., N.B. (*J. Moser*.) On bark, Bald Mountain, Tobique River, N.B. (*G. U. Hay*.) On rocks, Tadousac, Que. (*A. T. Drummond*.) On Rigaud Mountain, Vandreuil Co., Que. (*Rev. G. Ducharme*.) On shrubs, Anticosti; on stumps and old fence-rails at Big Island, Margaree, Cape Breton Island, N.S., July, 1890; on stumps, Port Daniel, Bonaventure Co., Que.; rather rare on rocks, Igonquin Park, Ont., July 21st, 1900; on boulders in woods, mouth of Nipigon River and along the shore of Lake Superior; on dead sticks at Jumping Pound Creek and Bragg's Creek, foothills of Rocky Mountains, June 13th, 1897; at Donald, Columbia Valley, B.C.; near McLeod's Lake, northern British Columbia. (*Macoun*.) On twigs of shrubs, Lat. 62° 03', Long. 103° 15', W. (*J. W. Tyrrell*.)

3. **EVERNIA, Ach., Mann.**31. **E. vulpina, (LINN.) ACH.**

A very common species in the Rocky Mountains above 5,000 feet altitude. We have specimens, generally in fine fruit, from Crow's Nest Pass, Bow River Pass, Moose Mountain, Devil's Lake Mountains and Sulphur Mountain at Banff; Deer Park, Arrow Lake, Columbia River; mountains at Spence's Bridge, B.C.; at lower altitudes at Parson's Mountain near Victoria, Vancouver Island. (*Macoun.*) On Douglas fir on Todd Mountain, B.C., alt. 6,500 feet. (*Dr. G. M. Dawson.*)

32. **E. furfuracea, (LINN.) MANN.**

Rather rare in Canada and seldom collected.

On trunks of trees, Deer Park, Lower Arrow Lake, Columbia River, B.C., June 6th, 1890. (*Macoun.*)

33. **E. prunastri, (LINN.) ACH.**

Arctic America. (*Richardson.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On trees at Edmonton, Ont. (*J. White.*) Quite common in Ontario on old fences and always sterile. On old pine stumps and fences as well as on trees at Ottawa, Ont.; on fence-rails at Belleville and Brighton, Ont.; on trees at Chalk River, Renfrew Co.; Algonquin Park, Ont., June, 1900; on trees at North Bay, Lake Nipissing, and on trees along the Nipigon River, Lake Superior; on trees, Duck Mountain and Lake Winnipegosis, Manitoba; on trees at Morley and Jumping Pound Creek, foothills of Rocky Mountains; on rocks at Yale, B.C.; on trees at Victoria and Comox, Vancouver Island. (*Macoun.*) Pacific Coast. (*Menzies.*)

Var. **gracilis, ACH.**

On dry earth on a hillside at Farewell Creek, Cypress Hills, Assa.; not uncommon, June 27th, 1895. (*Macoun.*)

34. **E. divaricata, (LINN.) ACH.**

On branches of spruce trees in the swamps near Banff, Rocky Mountains; on spruce trees Mount Forget-me-not, Elbow River, Rocky Mountains, alt. 7,000 feet, July 14th, 1897. (*Macoun.*)

4. **USNEA**, (Dill.) Ach.85. **U. sulphurea**, (Müll.) Th. Fr.

On rocks, Greenland. (*J. Vahl.*) Rocks, Arctic America ; dwarfed and sterile, Melville Island. (*Parry's 2nd voyage.*)

86. **U. barbata**, (Linn.) Fr. var. **florida** Fr.

The variety or form, *hirta*, is very common, but *florida* is rare in Canada. On dead wood, North West Arm, Halifax, N.S., June 20th, 1883. (*Macoun.*)

Specimens, without fruit, very glaucous and nearly smooth, have been collected on trees in Crow's Nest Pass, Rocky Mountains, alt. 4,000 feet, Aug., 1897, and on Douglas fir at Comox, Vancouver Island, May 3, 1887. The latter were referred to typical *U. barbata* by Dr. Eckfeldt.

Var. **hirta**, Fr.

Very common on trees and old fences.

On a sandy point in the Bay of St. George, Newfoundland. (*Waghorne.*) On trees, Bass River, Kent Co., N.B. (*Prof. Fowler.*) On dead branches, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On spruce trees at Edmonton, Ont. (*James White.*) On trees at Truro, N.S.; on trees, Brackley Point, Prince Edward Island ; on spruce trees, Cape Breton Island, N.S., but rare ; on trees and old fences at Ottawa, Ont.; on fence-rails Belleville and Brighton, Ont.; on balsam fir, Algonquin Park, Ont., June, 1900 ; on trees, Lake Nipigon, Ont.; on trees, Manitoba House and Porcupine Mountains, Man.; on trees at Morley, foothills of Rocky Mountains ; on spruce trees, C. P. R. station, Banff, and at Jumping Pound Creek, Rocky Mountains ; on branches and trunks, Deer Park, Lower Arrow Lake, Columbia River, B.C.; on oak trees around Victoria, Vancouver Island. (*Macoun.*)

Var. **rubiginea**, Michx.

On trees at Round Lake, Ottawa Co., Que. (*D'Urban.*) On trees in a swamp near Belleville, Ont. (*Macoun.*) On spruce trees at Edmonton, Ont. (*James White.*)

Var. **ceratina**, SCHAEER.

On trees, Ste. Anne des Monts River, Gaspé Co., Que.; rather common in spruce woods at Baddeck and other parts of Cape Breton Island, N.S.; on trees, Lake Nipigon, Ont.; on balsam fir Algonquin Park, Ont., June, 1900; in a swamp, C.P.Ry. station, Banff, Rocky Mountains; along Jumping Pound Creek and in the Crow's Nest Pass, Rocky Mountains; on trees at Hastings, Burrard Inlet, B.C.; on trees at Comox, Vancouver Island; on trees near Victoria, Vancouver Island. (*Macoun.*)

Var. **dasypoga**, FR.

Forteau Bay, Labrador; Shoal Point Bay, Wild Cove, Little Harbour, Frenchman's Cove and Bay Bull's Arm, Newfoundland. (*Waghorne.*) On trees along Jupiter River, Anticosti; on trees, Truro, N.S.; on trees, Lake Superior; on trees in woods, Duck Mountain, Man.; on spruce trees, Jumping Pound Creek, foothills of Rocky Mountains; on trees at Hastings, Burrard Inlet, B.C.; on trees, Sea's farm, Victoria, Vancouver Island. (*Macoun.*)

Var. **plicata**, FR.

On trees, summit of Mount Albert, Gaspé Co., Que.; on spruce trees, Baddeck and Big Intervale, Cape Breton Island, N.S.; on trees in Algonquin Park, Ont., June, 1900; on trees, Current River, Lake Superior; at Morley and Jumping Pound Creek, foothills of Rocky Mountains; on spruce trees, Bow River Pass, Rocky Mountains; on trees at Revelstoke, B.C.; on trees at Hastings, Burrard Inlet, B.C. (*Macoun.*)

Var. **articulata**, ACH.

On trees at Burrard Inlet, B.C., April 23rd, 1889; at Victoria, Vancouver Island, May 7th, 1875. (*Macoun.*)

Var. **hirtella**, ARN.

On a sandy point in the Bay of St. George, Newfoundland. (*Waghorne.*)

37. **U. angulata**, ACH.

On trees, Round Lake, Ottawa Co., Que. (*D'Urban.*) On trees around Lake Superior; on tamarac in the "Big Swamp," Mur: ay, Northumberland Co., Ont. (*Macoun.*)

38. U. trichodea, Ach.

On trees, Nova Scotia. (*Menzies fide Tuckerman.*) On trees in woods, Baddeck, Cape Breton Island, July 9th, 1898; also on fir trees, Gaspé coast, Quebec. (*Macoun.*) On trees at Carmanah Bay, Vancouver Island. (*J. M. Macoun.*)

39. U. longissima, Ach.

Newfoundland. (*Herb. Hooker.*) On trees, Kent Co., N.B. (*Prof. Fowler.*) On trees, Tadousac, Que. (*A. T. Drummond.*) North shore of Lake Superior. (*Agassiz.*) On trees, Halifax, N.S.; abundant on trees in woods at Baddeck and other localities, Cape Breton Island, N.S., July, 1898; on balsam fir, Algonquin Park, Ont., June, 1900; on trees, North Bay, Lake Nipissing; north-east coast of Lake Superior; on trees, Hastings, Burrard Inlet, B.C.; on trees, Burnside Road, Victoria, Vancouver Island. (*Macoun.*) Alaska. (*Dr. Kellogg.*)

40. U. cavernosa, Tuckerm.

On trees, north shore of Lake Superior. (*Agassiz.*) On spruce trees, Lake Nipigon; on trees at Banff, Rocky Mountains; on spruce trees at Victoria, Vancouver Island. (*Macoun.*) British Columbia. (*Dr. Lyall.*)

5. BRYOPOGON, Link.**41. B. divergens, (Ach.)**

On earth in alpine and arctic regions.

Greenland. (*Vahl.*) Newfoundland. (*Herb. Delessert.*) Long Island, Newfoundland. (*Waghorne.*) Clearwater Lake, Labrador, July 12th, 1896. (*A. P. Low.*) Marble Island, Hudson Bay and Digge's Island, Hudson Strait. (*Dr. R. Bell.*) Barren Grounds, Lat. 62° 30', Long. 103° 15' W., 1893. (*J. W. Tyrrell.*) Great Bear Lake. (*Richardson.*) On rocks, Parson's Mountain, Victoria, Vancouver Island, 1893. (*Macoun.*) Kotzebue Sound, Alaska. (*Herb. Church.*) Islands of Behring Strait. (*Wright.*)

42. B. bicolor, (Ehrh.)

Greenland. (*J. Vahl.*) Emily Harbor, Labrador. (*Waghorne.*)

43. *B. jubata*, (LINN.) var. *prolixa*, (ACH.) Th. Fr

Red Bay, Independent and Blanc Sablon, Labrador. (*Waghorne*.) On spruce trees at Baddeck, Cape Breton Island, N.S., 1898; on earth, Nipigon River, Ont., July, 1884; Morley, foothills of Rocky Mountain, June, 1885; on trees near the railway station, at Banff and on spruce trees, Jumping Pound Creek, Alta., Rocky Mountains; at Revelstoke, B.C., May 16th, 1890. (*Macoun*.) Unalaska, Aleutian Islands, Behring Sea, August 21st, 1891. (*J. M. Macoun*.)

We have not seen Mr. Waghorne's specimens, but all the others referred here are fuscus-black, rigid and covered with white soredia. They are very different from the usual forms of *chalybeiformis*.

Var. *chalybeiformis*, (ACH.)

On earth in alpine districts.

Greenland. (*J. Vahl*.) On earth, Baffin Land, north of Hudson Strait, 1896. (*Dr. R. Bell*.) Clearwater Lake, Labrador, July 21st, 1896. (*A. P. Low*.) Quite common on spruce trees at Big Intervale and Half-Way Brook, Cape Breton Island, N.S., July, 1898; on fence-rails at Belleville, Ont.; in swamps, Algonquin Park, Ont., July, 1900; on earth, Cypress Hills, Assa.; on earth, Jumping Pound Creek, foot-hills of Rocky Mountains; on trees and mountains by Kootenay Lake, B.C.; on mountains south of Spence's Bridge, B.C.; on trees, summit of Mount Benson, Nanaimo, B.C., July, 1893. (*Macoun*.) On earth, St. Paul Island, Behring Sea. (*J. M. Macoun*.)

Var. *implexa*, FR.

On trees throughout Canada.

Greenland. (*Arct. Man*.) Arctic America. (*Richardson*.) Notre Dame Bay, Newfoundland, and Blanc Sablon, Labrador. (*Waghorne*.) On trees, Tadousac, Que. (*A. T. Drummond*.) Barren Grounds, Lat. 61° 13', Long. 104' W. (*J. W. Tyrrell*.) On trees in many parts of Cape Breton Island, N.S., 1898; Truro, N.S.; Brackley Point, Prince Edward Island; along Gunn River, Anticosti; on spruce trees, Algonquin Park, Ont., June, 1900; Current River, Lake Superior and Nipigon River, Ont.; Porcupine Moun-

tains, Man.; Crow's Nest Pass, Rocky Mountains; on trees at Donald, Columbia Valley, B.C.; along the Columbia River at Revelstoke, B.C.; at Hastings, Burrard Inlet, B.C.; at Victoria, on Mount Benson and at Comox, Vancouver Island. (*Macoun.*) Todd Mountain, B.C. (*Dr. G. M. Dawson.*) Skeena River, B.C.; St. Paul Island, Behring Sea, 1892. (*J. M. Macoun.*)

44. **B. Fremontii**, (TUCKERM.)

On the branches of coniferous trees.

On *Larix occidentalis*, Arrow Lakes, Columbia River, B.C.; on trees in swamps at Sicamous, B.C., July 7th, 1889; on spruce trees, Stewart's Lake, B.C.; on Douglas Fir, Mount Benson, Nanaimo, Vancouver Island. (*Macoun.*) Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*) British North America. (*Drummond.*)

6. **ALECTORIA**, (Ach.) NYL.

45. **A. ochroleuca**, (EHRH.) var. **rigida**, FR.

Both arctic and alpine.

Greenland. (*Arct. Man.*) Greenland. (*Branth.*) On earth in Arctic America. (*Richardson.*) Ford's Harbor, Labrador; Cape Chudleigh and Nottingham Island, Hudson Strait; on earth, Baffin Land, north shore of Hudson Strait, 1896. (*Dr. R. Bell.*) L'Anse au Mort and Blanc Sablon, Labrador. (*Waghorne.*) Clearwater Lake, Labrador, 1896; Summit Lake, Manicouagan River, Que., 1895. (*A. P. Low.*) Newfoundland. (*Despreaux.*) Barren Grounds, Lat. 62° 03', Long. 103° 15' W. (*J. W. Tyrrell.*) On the summit of Mount Albert, Gaspé Co., Que. (*Macoun.*) Vancouver Island. (*Herb. Hooker.*)

46. **A. sarmentosa**, (Ach.) NYL.

On coniferous trees. Common on the Pacific Coast.

Greenland. (*Branth.*) Cape Forteau, Leading Tickle and Blanc Sablon, Labrador. (*Waghorne.*) On spruce and fir trees in woods at Baddeck and Big Intervale, Cape Breton Island, N.S., July, 1898; Salt Lake, Anticosti; Kicking Horse Lake and Moose Mountain, near source of Elbow River, Rocky Mountains; Donald, Columbia River, B.C.; Asulkan Glacier, Selkirk Mountains, B.C.; near McLeod's Lake, northern British Colum-

bia; Hastings, Burrard Inlet, B.C.; on Douglas fir at Victoria, Nanaimo and Comox, Vancouver Island. (*Macoun.*) Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*) Pease Island, Gulf of Georgia, Vancouver Island. (*Dr. G. M. Dawson.*) Skeena River, B.C., and Port Etches, Alaska. (*J. M. Macoun.*)

Var. **cinnamomea**, FR.

On earth in Greenland. (*Dr. Branth.*) Near Independent, Labrador. (*Waghorne.*) On earth (fertile), Newfoundland. (*Despreaux.*) Digge's Island, Hudson Strait, and North Bay, Hudson Bay, Aug., 1885. (*Dr. R. Bell.*)

47. **A. nigricans**, ACH.

Greenland. (*Arct. Man.*) On earth (fertile), Labrador, and Newfoundland, (fertile). (*Despreaux.*) On earth, Clearwater Lake, Labrador, July, 1896. (*A. P. Low.*) Near L'Anse au Loup, Labrador. (*Waghorne.*) Ford's Harbor, Labrador; Mansfield Island, and Marble Island, Hudson Bay. (*Dr. R. Bell.*) Summit of Mount Albert, Gaspé Co., Que.; on earth, summit of Gold Range, near Griffin Lake, B.C. (*Macoun.*) St. Paul Island and St. George Island, Behring Sea. (*J. M. Macoun.*)

FAMILY II. PARMELIÆ.

7. **THELOSCHISTES**, Norm.

48. **T. chrysophthalmus**, (LINN.) NORM.

On trees and fence-rails along large bodies of water.

On trunks along Lake Ontario at Wellington Beach and Presqu'île Point; on fence-rails, Port Rowan, Lake Erie; on trees, Pelee Point, Essex Co., Ont., May 27th, 1901; on trees, Lake Winnipegosis, Man. (*Macoun.*)

Var. **flavicans**, WALLR.

Coast of Newfoundland. (*Nylander.*)

49. **T. parietinus**, (LINN.) NORM.

On trunks and stones near large bodies of water.

Newfoundland, 1826. (*Pylaiæ.*) Shores of Lake Superior. (*Agassiz.*) Very abundant on roofs of houses and old board

fences, Sable Island, N.S., July 27th, 1899; on trees, Presqu'île Point, Lake Ontario; on stones along Lake Winnipegosis, Man. (*Macoun.*)

50. **T. polycarpus**, (EHRH.) TUCKERM.

On trees, dead wood, fence-rails and old boards.

On bark, Turner's Head, Labrador. (*Waghorne.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On trees at Campbellton, N.B.; dead wood, Jupiter River, Anticosti; on spruce twigs at Grand Narrows, and abundant on old fence-rails, Big Intervale, and on "fish flakes" McNeill's Harbour, Cape Breton Island, N.S., July, 1898; on bitter-nut hickory trees, at Belleville, Ont.; on trees, Red Rock, Nipigon Bay, Lake Superior; abundant on trees at Winnipeg and Stony Mountain, Man.; on trunks, Red Deer River, Lake Winnipegosis, Man.; on poplar trees, Moose Mountain, Assa. (*Macoun.*) On scrub oaks, Greenwood, Man. (*Thos. Walker.*) On maple and elm trees at Edmonton, Ont. (*James White.*)

51. **T. lychnus**, (NYL.) TUCKERM.

On trees and stones and old fence-rails.

Greenland. (*Branth.*) On oak bark, High Park, Toronto, 1901; on cedar bark, Pelee Point, Essex Co., May 27th, 1901; abundant on choke-cherry trees, Old Wives' Creek, Assa., May, 1895; on old cedar fences at Hastings, Burrard Inlet, B.C.; on old fence-rails at Cadboro Bay and Comox, and on poplar trees and dead wood at Victoria, Vancouver Island. (*Macoun.*) St. Paul Island, Behring Sea. (*J. M. Macoun.*) On rocks, islands in Behring Strait. (*Wright.*) Alaska. (*Dr. Kellogg.*)

52. **T. concolor**, (DICKS.) TUCKERM.

On trees and rocks.

On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) Abundant on black ash trunks in McKay's woods and other places at Ottawa, Ont.; on basswood trunks at Carleton Place, Carleton Co., Ont.; and on basswood and ash trees, Seymour West, Northumberland Co., Ont.; on trees at Hastings, B.C., April, 1889. (*Macoun.*)

8. **PARMELIA**, (Ach.) De Not.53. **P. perlata**. (LINN.) ACH.

Chiefly on old trunks of trees in swamps ; sometimes on rocks.

On rocks, Bald Mountain, Tobique River, N.B. (*G. U. Hay.*) Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On trunks of trees in woods, Big Intervale, Margaree, Cape Breton Island, N.S., 1898; on birch trees, Truro, N.S.; on trunks of trees, Gaspé Co., Que. ; on trunks at Beechwood, Ottawa, Ont.; on trees at Chelsea, Que.; on trees at Belleville, Ont.; on old rails, Seymour West, Northumberland Co., Ont., 1893 ; on a fallen balsam in a swamp at Guelph, Ont. ; on trees by Lake Erie at Leamington, Essex Co., Ont., May 29th, 1901 ; not uncommon, Algonquin Park, Ont., June, 1900 ; on trees, Goulais Point, Lake Superior. (*Macoun.*) Lake Superior. (*Agassiz.*)

54. **P. perforata**, (JACQ.) ACH.

On trees and stones.

On trees at Belleville, Ont. ; on trees at Burrard Inlet, B.C., April 24th, 1889. (*Macoun.*) On a mountain at Spence's Bridge, B.C., 1892. (*James McEvoy.*) Pacific coast. (*Menzies.*)

55. **P. cetrata**, ACH.

On an elm trunk in a swamp at Carleton Place, Ont., May 12th, 1900 ; on the timbers of the old wharf at Comox, Vancouver Island. (*Macoun.*) Near Cape Beale, Vancouver Island. (*J. M. Macoun.*)

56. **P. crinita**, ACH.

On trees and rocks.

On trunks, Central Ontario Junction, Hastings Co., Ont. ; on old rails by woods, Seymour West, and on trunks, Brighton, Northumberland Co., Ont. ; on trees, Johnstone's Harbour, Bruce Peninsula, Lake Huron, Aug. 22nd, 1901. (*Macoun.*) On a beech tree at Credit Forks, Ontario Co., Ont. (*Thos. Walker.*)

57. **P. tiliacea**, (HOFFM.) FLOERK.

On trees and stones ; commonly on beech and spruce trees.

Ste. Anne des Monts River, Gaspé Co., Que. ; on beech trees, Big Intervale, Margaree, Cape Breton Island, N.S., July 1898 ; on trees in numerous places around Hull, Que., and Ottawa, Ont. ; Pagan Falls, Gatineau River, Que. ; on trees, Terrill's farm, near Wooler, Ont. ; on birch trunks, Algonquin Park, Ont., July, 1900. (*Macoun.*) On bark of trees, Canaan Forks, N.B. (*J. Moser.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*)

58. **P. Borreri**, TURN.

On trees and dead wood ; rare. Only collected in the neighbourhood of Ottawa, Ont. (*Macoun.*)

Var. **rudecta**, TUCKERM.

On dead wood at Ottawa, Ont. ; on old rails, Brighton, Northumberland Co., Ont., Oct., 1893. (*Macoun.*) On maples at Edmonton, Ont. (*J. White.*) On old rails, Big Intervale, Margaree, Cape Breton Island, July, 1898 ; on trunks, Algonquin Park, Ont., June, 1900 ; on bark at Niagara Falls and Pelee Point, Ont., 1901. (*Macoun.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*)

59. **P. saxatilis**, (LINN.) FR.

Common on trees, dead wood, fences and rocks.

Greenland. (*Warming.*) On trees, Bald Mountain, Tobique River, N.B. (*G. U. Hay.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) Common on old logs on Cape Breton Island, N.S., and in woods, fruiting abundantly ; old logs, Truro, N.S. ; on trees, Ste. Anne des Monts River, Gaspé Co., Que. ; on trees, Jupiter River, Anticosti, Que. ; on old rails and trees at Ottawa and Belleville, Ont. ; on trunks, Algonquin Park, Ont., June, 1900 ; on trees, North Bay, Lake Nipissing ; on trees, Lake Nipigon, Ont. ; on trees, Red Deer River, Man. ; on spruce trees, Jumping Pound Creek, and in the Crow's Nest Pass, Rocky Mountains ; on trees, Deer Park, Columbia Valley, B.C. ; on rocks, Hastings, Burrard Inlet, B.C. ; on trees, Burnside Road, Victoria, and on Mount Benson, Nanaimo, Vancouver Island. (*Macoun.*) On earth and logs, Fort Rupert, Vancouver Island. (*Dr. G. M. Dawson.*) Chilli-wack Valley, B.C. ; St. Paul and St. George islands, Behring Sea. (*J. M. Macoun.*)

Var. *sulcata*, NYL.

On trees, dead wood, fences and rocks.

On old boards and posts, Main Station, Sable Island, N.S., July, 1899; on trees, Jupiter River, Anticosti, and along the Gaspé coast, Que.; not uncommon on old logs, fence-rails and trunks, at Ottawa, Ont.; on fence-rails, near Wooler, Ont.; on rocks, Lake Nipigon, Ont.; on old logs, Jumping Pound Creek, Rocky Mountains; on rocks, Deer Park, Columbia Valley, B.C.; on trees and old logs, Hastings, Burrard Inlet, B.C.; on oak trees, Burnside Road, Victoria, and on the old wharf at Comox, Vancouver Island. (*Macoun.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) St. George Island, Behring Sea, and Middleton Island, Alaska. (*J. M. Macoun.*)

Var. *panniformis*, (ACH.) SCHÆR.

Greenland. (*Arct. Man.*) Arctic America. (*Herb. Hooker.*) L'Anse au Clair and Battle Harbour, Labrador. (*Waghorne.*) On rocks, Lake Nipigon, Ont., July 17th, 1884. (*Macoun.*)

Var. *omphalodes*, FR.

On rocks in alpine districts.

Greenland. (*Arct. Man.*) On rocks at Louisburg, Cape Breton Island, N.S., July, 1898; on rocks, Moose Mountain, Rocky Mountains, alt. 6000 feet; on rocks, Deer Park, Columbia Valley, B.C. (*Macoun.*) On rocks, St. Paul Island, Cape Vancouver and Unalaska Island, Behring Sea. (*J. M. Macoun.*)

Var. *furfurascens*, SCHÆR.

On rocks, Blanc Sablon, Labrador. (*Waghorne.*)

60. *P. physodes*, (LINN.) var. *vulgaris*, KÖRB.

Greenland. (*Arct. Man.*) Greenland. (*Warming.*) On trees, Clearwater Lake, Labrador, July, 1896. (*A. P. Low.*) On spruce twigs, Lat. 61°, Long. 104° W. (*J. W. Tyrrell.*) On dead wood, Canaan Forks, N.B. (*J. Moser.*) Spruce trees, Lake Mistassini, northern Quebec, June, 1885. (*J. M. Macoun.*) On old boards, Main Station, Sable Island, N.S., July, 1899; quite common on trunks of trees, rails and old logs, Cape Breton Island, N.S., July,

1898; on rocks and dead wood, seldom fertile, on trees commonly so, Percé, Bay des Chaleurs, Bonaventure Co., Que.; on ash and other trees at Ottawa, Ont.; on trunks at Belleville, Ont.; on fence-rails at Brighton, Ont.; on old fence-rails, Seymour West, Northumberland Co., Ont.; on rocks, North Bay, Lake Nipissing; Algonquin Park, Ont.; June, 1900; on trees, Thunder Bay, Lake Superior; on dead wood and rocks, Nipigon River, Ont.; on trees along Jumping Pound Creek and Bragg's Creek, Rocky Mountains; on trees at Donald, B.C., July 6th, 1885; on rocks, Devil's Lake, Rocky Mountains; on old logs, Hastings, Burrard Inlet, B.C.; on rocks near Victoria, and on the old wharf at Comox, Vancouver Island. (*Macoun.*) On trees, New Westminster, B.C. (*Law.*) On dead wood, Alert Bay, Vancouver Island. (*Dr. G. M. Dawson.*)

Var. **obscurata**, ACH.

L'Anse au Mort, Labrador. (*Waghorne.*) Alpine rocks, Arctic America. (*Herb. Hooker.*) On rocks on Moose Mountain, alt. 6,000 feet, Rocky Mountains, July 2nd, 1897. (*Macoun.*) Islands of Behring Strait. (*Wright.*)

Var. **enteromorpha**, TUCKERM.

Blanc Sablon, Labrador. (*Waghorne.*) Very abundant on trees around Victoria, at Nanaimo, Qualicum, and Comox, Vancouver Island; on trees at Hastings, Burrard Inlet, B.C.; on trees near McLeod's Lake, northern British Columbia. (*Macoun.*) On trees, Fort Rupert, Vancouver Island. (*Dr. G. M. Dawson.*) Chelliwack Valley, B.C. (*J. M. Macoun.*)

Var. **vittata**, ACH.

Bay Bull Arm, Trinity Bay and Goose Arm, Newfoundland. (*Waghorne.*) On spruce trees along Ste. Anne des Monts River, Gaspé Co., Que. (*Macoun.*) At Carmanah, near Cape Beale, Vancouver Island. (*J. M. Macoun.*)

61. **P. encausta**, (SMITH) NYL.

Alpine rocks, Greenland. (*Vahl.*) Labrador. (*Waghorne.*)

Var. **alpicola**, NYL.

A blackened alpine condition.

Greenland. (*Vahl.*) Labrador. (*Waghorne.*)

62. *P. colpodes*, (ACH.) NYL.

On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme*.)
On trees, Central Ontario Junction, Hastings Co., Ont., Oct. 22nd,
1893; on trees, chiefly tamarac, in a swamp near Ottawa, Ont.,
and on trees, King's Mountain, Chelsea, Que. (*Macoun*.)

63. *P. olivacea*, (LINN.) ACH.

Greenland. (*Branth*.) On trees, Arctic America. (*Richardson*.)
On trees, Canaan Forks, Queen's Co., N.B. (*J. Moser*.) On
Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme*.)
On alders at Baddeck and Big Intervale, and on rocks, Cape
Breton Island, N.S., July, 1898; on alders, Ste. Anne des Monts
River, Gaspé Co., Que.; rather common on bark of trees,
especially alder, at Ottawa, Ont.; on trees, Nipigon River, Ont.;
on trees along Jumping Pound Creek, Rocky Mountains, June,
1897; on trees at Morley, Jumping Pound Creek, and Kanan-
askis, Rocky Mountains; on alder bushes, Revelstoke and Black-
water River, and Hastings, Burrard Inlet, B.C.; on poplar trees,
Sea's farm, Victoria, Vancouver Island. (*Macoun*.) Athabasca
River. (*J. M. Macoun*.)

Var. *aspidota*, ACH.

On rocks, coast of Newfoundland, 1893. (*Waghorne*.)

Var. *prolixa*, ACH.

On rocks, shores of Lake Nipigon, July, 1884; on rocks
Spence's Bridge, B.C., May, 1889. (*Macoun*.)

Var. *panniformis*, NYL.

On rocks on Parson's Mountain, near Victoria, Vancouver
Island, May 17th, 1893. (*Macoun*.)

Var. *sorediata*, (ACH.) NYL.

On fence boards, Sable Island, N.S., 1899; Baddeck, Cape
Breton Island, N.S., 1898; on alders near Hull, Que., 1891, and
on fence-rails, Rideau Park, Ottawa, Ont., 1887; on old cedar
rails, Hastings Co., Ont., 1868; on fence-rails, Seymour West,
Northumberland Co., Ont., 1893; on rocks near Galt, Ont.; in

Algonquin Park, Ont., 1900; on rocks, C  che Lake, Algonquin Park, Ont., July, 1900; on rocks, Nipigon River, Ont.; on rocks, Blackwater River, B.C.; on alders, Hastings, B.C., 1889. (*Macoun.*)

A form found on *Alnus incana* and on fences, with us, always infertile, is placed under var. *sorediata* because the specimens are more or less sorediate, with white powdery granules on the margins of the divisions of the thallus.

64. ***P. stygia***, (LINN.) ACH.

Alpine and subalpine rocks.

Greenland. (*Branth.*) Arctic America. (*Richardson.*) Newfoundland. (*Pylaie.*) Labrador. (*Waghorne.*) On rocks, Tadousac, Que. (*A. T. Drummond.*) On rocks, Deer Park, Columbia River, B.C., 1890; on sandstone rocks along Jumping Pound Creek, Rocky Mountains, June, 1897. (*Macoun.*)

65. ***P. lanata***, (LINN.) WALLR.

Greenland. (*Branth.*) Arctic America. (*Richardson.*) Melville Island. (*R. Brown.*) Labrador. (*Waghorne.*) On the summit of Mount Benson, alt. 3,000 feet, Nanaimo, Vancouver Island, July 10th, 1893. (*Macoun.*)

66. ***P. caperata***, (LINN.) ACH.

Trunks, dead wood and stones, quite common.

On old rails, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Arctic America. (*Richardson.*) On trees, Tobique River, N.B. (*G. U. Hay.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On old fences around Ottawa, Ont.; at Belleville, Brighton and Nipigon River, Ont.; on trunks at Jordan Station, Lincoln Co., Ont., May 17th, 1901; on basswood trees at Guelph, Ont., 1898; on trunks, Algonquin Park, Ont., 1900; on dead wood, Manitoba House, Man.; on dead wood at Morley, Rocky Mountains. (*Macoun.*) On board fences at Edmonton, Ont. (*James White.*)

67. ***P. conspersa***, (EHRH.) ACH.

On rocks and stones and sometimes on dead wood.

Greenland. (*Branth.*) Arctic America. (*Richardson.*) Labrador. (*Waghorne.*) On rocks, Barren Grounds, Lat. 61  , Long.

104°, W. (*J. W. Tyrrell*.) On rocks, Never's Rapids, Queen's Co., N.B. (*J. Moser*.) On boulders, Carleton Co., N.B. (*G. U. Hay*.) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme*.) Dry rocks, Stony Lake, Peterboro' Co., Ont. (*Thos. Walker*.) On boulders, Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898; on boulders along Ste. Anne des Monts River, Gaspé Co., Que.; on boulders in woods around Ottawa, Ont.; very common in Algonquin Park, Ont., 1900; on rocks on Moose Mountain and in Crow's Nest Pass, Rocky Mountains; on rocks, Blackwater River, B.C.; on rocks and old logs, Deer Park, Columbia Valley, B.C.; on rocks at Hastings, Burrard Inlet, B.C.; on rocks, Burnside Road, Victoria, Vancouver Island. (*Macoun*.)

68. ***P. molliuscula***, ACH.

Not uncommon on earth in the southern parts of the prairie region from Manitoba to the Rocky Mountains; on earth at Old Wives Creek, Assa.; in the Bow River Pass at Morley, and by the lake in the Crow's Nest Pass, Rocky Mountains. (*Macoun*.)

69. ***P. centrifuga***, (LINN.) ACH.

Alpine and subalpine rocks.

Greenland. (*Branth*.) Arctic America. (*Vahl*.) Digge's Island, Hudson Strait. (*Dr. R. Bell*.) Blanc Sablon, Labrador. (*Waghorne*.) Clearwater Lake, Labrador, July, 1896; Summit Lake, Manicouagan River, Que, 1895. (*A. P. Low*.) Newfoundland. (*Despreaux*.) Tobique River, N.B. (*G. U. Hay*.) On rocks, Tadousac, Que. (*Drummond*.) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme*.) Along the northeast coast of Lake Superior, and along Nipigon Lake and river. (*Macoun*.) North shore of Lake Superior. (*Agassiz*.)

70. ***P. incurva***, (PERS.) FR.

On granitic rocks, alpine and arctic. Greenland. (*Branth*.) Labrador. (*Waghorne*.)

71. ***P. ambigua***, (WULF.) ACH.

On trunks, dead wood and rocks.

Greenland. (*Arct. Man*.) Arctic America. (*Richardson*.) Trinity Bay, Newfoundland. (*Waghorne*.) On dead spruce logs at the

Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898 ; on dead bark at Banff, Rocky Mountains ; on dead logs, Jumping Pound and Bragg's creeks, Rocky Mountains, June, 1897 ; on old logs, Deer Park, Lower Arrow Lake, B.C. ; on dead pine logs, northern British Columbia. (*Macoun.*)

Var. **albescens**, WAHL.

Greenland. (*Arct. Man.*) Birchy Cove and Eagle River, Newfoundland. (*Waghorne.*) On old logs and rails, Big Intervale, Margaree, Cape Breton Island, N.S., July 22nd, 1898. (*Macoun.*)

9. **PHYSCIA**, (DC., Fr.) Th. Fr.

72. **P. speciosa**, (WULF.) NYL.

Trees and mossy rocks in woods.

On trees and rocks in damp woods at Ottawa, Ont. ; on old rails in woods, Brighton, Ont. ; on moss on rocks, Foster's Flats, Niagara Falls, May 16th, 1901 ; on stones along Nipigon River, Ont., July, 1884 ; on birch trunks, Algonquin Park, Ont., June, 1900. (*Macoun.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*)

73. **P. hypoleuca**, (MUHL.) TUCKERM.

On trunks in woods near Wooler, Northumberland Co., Ont., Oct. 16th, 1893 ; on rocks, Lake Nipigon, July 17th, 1884 ; on trunks, rare, Red Pine Lake, Algonquin Park, Ont., July 19th, 1900. (*Macoun.*)

74. **P. leucomola**, (LINN.) MICHX.

Labrador. (*Waghorne.*) On trees at Carmanah, near Cape Beale, Vancouver Island, May 9th, 1892. (*J. M. Macoun.*)

75. **P. ciliaris**, (LINN.) DC., var. **crinalis**, SCHÆR.

Newfoundland. (*Despreaux.*) L'Anse au Clair, Labrador. (*Waghorne.*) On rocks at Louisburg, Cape Breton Island, N.S. ; on fence-rails, James Terrill's farm, Brighton, Ont. ; on dead wood within the spray of Lake Ontario at Wellington Beach, Prince Edward Co., Aug. 14th, 1868 ; on rocks, Lake Nipigon, July, 1884 ; specimens with wider lobes and much whiter in color

have been gathered on earth on the prairie at Old Wives' Creek, Assa., May 30th, 1895. (*Macoun.*) On rocks, Lake Mistassini, northern Quebec, 1885. (*J. M. Macoun.*) Rocky Mountain and Arctic America. (*Richardson.*)

76. **P. aquila**, (ACH.) NYL, var. **detonsa**, TUCKERM.

On rocks and trees.

On the bases of beech trees at Edmonton, Ont. (*James White.*)

77. **P. pulverulenta**, (SCHREB.) NYL.

On trunks and rocks, and sometimes on the earth.

Arctic America. (*Richardson.*) On earth, Greenland. (*Branth.*) On trees at Ottawa, Shannonville, Belleville and Brighton, Ont.; on rocks, Nipigon River, Ont.; on rocks in woods, Jumping Pound Creek, and at Banff, Rocky Mountains; on rocks, Deer Park, Columbia Valley, B.C.; on rocks, Blackwater River, B.C.; on earth and rocks at Lytton, B.C., April 17th, 1889. (*Macoun.*)

Var. **muscigena**, SCHREB.

Greenland. (*Arct. Man.*) Newfoundland. (*Despreaux.*) Arctic America. (*Herb. Hooker.*) L'Anse au Mort and L'Anse au Clair, Labrador; Middle Arm, Newfoundland. (*Waghorne.*)

Var. **beucoleiptes**, TUCKERM.

On rocks, Little Fox River, Gaspé Co., Que.; on rocks, Nipigon River, Ont., June 1884; on rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C.; on rocks along Jumping Pound Creek, Rocky Mountains, June 14th, 1897. (*Macoun.*)

78. **P. stellaris**, (LINN.) TUCKERM.

On trees, dead wood, rocks and stones.

Greenland. (*Branth.*) Arctic America. (*Richardson.*) Independent, Labrador. (*Waghorne.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On trees, but not common, at Baddeck and Big Intervale, Cape Breton Island, N.S., July, 1898; on dead wood, Truro, N.S.; on trees, Ste Anne des Monts River, Gaspé Co., Que.; very common on trees and rails at Ottawa and Casselman, Ont.; at Belleville and Brighton, Ont.; on trees at Winnipeg and Manitoba House, Man.; along Old

Wives' Creek ; on poplar trees, Moose Mountain, Assa. and on Wood Mountain, Assa., 1895 ; on trees near Victoria, Vancouver Island, May, 1893. (*Macoun.*) On old rails and apple and plum trees, Edmonton, Ont. (*James White.*) On scrub oak, Greenwood, Man.; near Yorkton, Assa. (*Thos. Walker.*) Chamisso Island in Eschscholtz Bay ; Little Koniushi Island, of Shumagin Group; and Glacier Spit, Cook's Inlet, Alaska. (*Rothrock.*)

Var. *aiPOLIA*, NYL.

On bark of black ash, Seymour West, Northumberland Co., Ont.; on bark of trees at Ottawa, Ont., and at Aylmer, Que.; on trunks, Pelee Point, Essex Co., Ont., May 27th, 1901. (*Macoun.*) On maple and black ash trees, Edmonton, Ont. (*James White.*)

79. *P. astroidea*, (FR.) NYL.

On old rails and trunks of trees,

On old rails near Hintonburg, Ont.; abundant on the upper part of a fallen hemlock, near Hemlock Lake, McKay's woods, Ottawa, Ont., and on old rails at Aylmer, Que., May 22nd, 1897. (*Macoun.*)

80. *P. hispida*, (SCHREB.) TUCKERM.

On trees, dead wood and rocks.

Arctic America. (*Richardson.*) On old rails, quite rare, Big Intervale, Cape Breton Island, N.S., July, 1898 ; on rocks at Campbellton, Restigouche River, N.B.; on boulders at Belleville, and fence-rails at Brighton, and on trees, Seymour West, Ont.; on poplar trees, Stony Mountain, Man.; on poplar bark, Sea's farm, Victoria, Vancouver Island. (*Macoun.*)

Var. *leptalea*, ACH.

Parmelia marina, E. Nyl.

Mullin's Cove, Labrador. (*Waghorne.*) On an old wharf at Comox, Vancouver Island, June 24th, 1893. (*Macoun.*)

81. *P. caesia*, (HOFFM.) NYL.

On rocks, Greenland. (*Branth.*) On rocks, Long Island, Newfoundland. (*Waghorne.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On rocks, C  che Lake, Algonquin Park, Ont., July, 1900 ; on rocks, Lake Nipigon, Ont.; on rocks in

woods at Banff, Rocky Mountains ; on rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C.; on old fences, Hastings, Burrard Inlet, B.C. (*Macoun.*)

82. ***P. tribacia***, (ACH.) TUCKERM.

East Ste. Modeste, Labrador. (*Waghorne.*) On red ash trees along Lake Duchesne, above Britannia, near Ottawa, Ont., Oct. 27th, 1900 ; abundant on oak trees, Pelee Point, Essex Co., Lake Erie, May 27th, 1901. (*Macoun.*)

83. ***P. crispa***, (PERS.) NYL.

Labrador. (*Waghorne.*)

84. ***P. obscura***, (EHRH.) NYL.

On trees, dead wood and rocks.

Greenland. (*Branth.*) Arctic America. (*Richardson.*) Labrador. (*Waghorne.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On black ash trees at Edmonton, Ont. (*James White.*) On trees at Baddeck, Cape Breton Island, N.S., July, 1898, rare ; on trees at Ottawa, Ont.; on bark of trees at Hull, Que.; on ash trees at Belleville and on trees and fence-rails at Brighton, Ont.; on trunks of trees, Algonquin Park, Ont., June, 1900 ; on rocks, Lake Nipigon, Ont.; on trees at Red Rock, Lake Superior ; on trees, Lake Winnipegosis, Man.; on rocks, Jumping Pound Creek, Rocky Mountains, June 14th, 1897 ; in the Crow's Nest Pass, Rocky Mountains ; on rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C. (*Macoun.*)

Var. ***endochrysea***, NYL.

Labrador. (*Waghorne.*) On rocks, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On black ash trees near Ottawa, Ont., April, 1895 ; on moss on Laurentian rocks at Shan-nonville, Hastings Co., Ont., Sept. 20th, 1868. (*Macoun.*)

85. ***P. setosa***, (ACH.) NYL.

On mosses ; on rocks and trunks.

On trunks in woods at Brighton, Ont.; not uncommon on trunks in many places around Ottawa, Ont. ; on trunks, Algonquin Park,

Ont., June, 1900; on rocks at Banff, Rocky Mountains; on dead trunks along Jumping Pound Creek, Rocky Mountains, June 12th, 1897. (*Macoun.*)

86. **P. adglutinata**, (FLOERK) NYL.

On beech trees in Beechwood cemetery, Ottawa, Ont., April 23rd, 1892. (*Macoun.*) Apparently rare in Canada

10. **PYXINE, Fr., Tuckerm.**

87. **P. sorediata**, FR.

On trees and rocks.

On trees, Tobique River, N.B. (*G. U. Hay.*) On trees at Baddeck, Cape Breton Island, N.S., July, 1898; on balsam, spruce and beech trees at Ottawa, Ont.; on dead wood at Belleville, and on beech trees at Brighton, Ont.; on old rails, Seymour West, Northumberland Co., Ont., Oct., 1893; on cedar bark, Algonquin Park, Ont., June, 1900. (*Macoun.*) On Rigaud Mountain, Vaudreuil, Co., Que. (*Rev. G. Ducharme.*) On poplar and red maple at Edmonton, Ont. (*James White.*)

FAMILY III. UMBILICARIEI.

11. **UMBILICARIA, Hoffm.**

88. **U. rugifera**, NYL.

Greenland. (*Giseke.*) Labrador. (*Waghorne.*) On rocks, Unalaska Island, Behring Sea, 1891, and abundant on St. Paul and St. George islands, Behring Sea, July, 1897. (*J. M. Macoun.*)

89. **U. cylindrica**, (LINN.) DELIS.

High alpine and arctic rocks.

Greenland. (*Vahl.*) Labrador. (*Herb. Schwein.*) Labrador. (*Waghorne.*) Newfoundland. (*Despreaux.*) Digge's Island, Hudson Strait; a small piece. (*Dr. R. Bell.*) Bear Lake. (*Herb. Hooker.*) On rocks, Moose Mountain, near the source of the Elbow River, Rocky Mountains, July 1st, 1897, alt. 6,500 feet. (*Macoun.*) Very fine specimens were gathered on St. Paul and St. George islands, Behring Sea, in July, 1897, by Mr. J. M. Macoun.

90. *U. proboscidea*, (LINN.) STENH.

Alpine rocks, Greenland. (*Vahl.*) Arctic America. (*Richardson.*) Digge's Island, Hudson Strait; also on Baffin Land, 1897. (*Dr. R. Bell.*) Battle Harbor and Sampson's Island, Labrador. (*Waghorne.*) Newfoundland. (*Despreaux.*) Summit of Mount Albert, Gaspé Co., Que.; on rocks, Moose Mountain, alt. 6,500 feet, Rocky Mountains; on rocks, Mount Benson, Nanaimo, Vancouver Island. (*Macoun.*) North shore of Lake Superior. (*Agassiz.*) St. Paul, St. George and St. Lawrence islands, Behring Sea. (*J. M. Macoun.*) St. Matthew Island, Alaska. (*Rothrock.*)

Var. *arctica*, ACH.

On rocks, Greenland. (*Vahl.*) Labrador. (*Waghorne.*) Newfoundland. (*Despreaux.*) Summit of Mount Benson, alt. 3,000 feet, Nanaimo, Vancouver Island. (*Macoun.*)

91. *U. anthracina*, (WULF.) SCHÆR.

On rocks, Greenland. (*Vahl.*) Labrador. (*Waghorne.*) Newfoundland. (*Despreaux.*) On rocks, summit of Mount Benson, near Nanaimo, Vancouver Island. (*Macoun.*)

Var. *reticulata*, SCHÆR.

Arctic America. (*R. Brown.*) On Nottingham Island, Hudson Strait, 1884. (*Dr. R. Bell.*)

92. *U. polyphylla*, (LINN.) HOFFM.

Alpine rocks, descending towards the north.

Greenland. (*Vahl.*) Labrador. (*Waghorne.*) Newfoundland. (*Despreaux.*) On rocks along Nipigon River and Lake; on rocks near the "Gap," Crow's Nest Pass, 1897; on rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C.; on rocks, Pier's farm, Victoria, Vancouver Island. (*Macoun.*) Mount Queest, Gold Range, B.C. (*J. M. Macoun.*) Unalaska Island, Alaska. (*Rothrock.*)

Var. *deusta*, (LINN.) FR.

Grand Lake, Bay of Islands, Newfoundland. (*Waghorne.*)

93. **U. flocculosa**, HOFFM.

Alpine rocks, descending to lower altitudes towards the north.

Greenland. (*Arct. Man.*) Bolster Rocks, Newfoundland. (*Waghorne.*) On rocks, along Half-Way Brook, Cape Breton Island, N.S., Aug., 1898; rather common on rocks at C  che Lake, Algonquin Park, Ont., July, 1900; on rocks, Nipigon River; on rocks at Sproat, Columbia River, B.C., 1890. (*Macoun.*) Rocky Mountains. (*Herb. Hooker.*) Behring Strait. (*Wright.*)

94. **U. hyperborea**, HOFFM.

On rocks, Greenland, 1884. (*Warming & Holm.*) Arctic America. (*Richardson.*) On rocks, Cape Chudleigh, Hudson Strait; also on Baffin Land, 1897. (*Dr. R. Bell.*) On rocks, Clearwater Lake, northern Labrador, 1897. (*A. P. Low.*) Labrador. (*Waghorne.*) Newfoundland. (*Despreaux.*) On gneiss rocks, Tadousac, Que. (*A. T. Drummond.*) On rocks along Jupiter River, Anticosti, Que.; on rocks, northeast coast of Lake Superior; on rocks, Moose Mountain, alt. 6,500 feet, and Crow's Nest Pass, Rocky Mountains; on rocks, Deer Park, Lower Arrow Lake, Columbia River, also at Lytton on Fraser River, B.C.; on rocks, summit of Mount Benson, near Nanaimo, Vancouver Island. (*Macoun.*) North shore of Lake Superior. (*Agassiz.*) Rocky Mountains. (*Herb. Hooker.*) Harbledown Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*)

95. **U. ph  a**, TUCKERM.

On rocks, Parson's Mountain, near Victoria, Vancouver Island, May 17th, 1893. (*Macoun.*)

96. **U. erosa**, (WEB.) HOFFM.

Alpine rocks, descending towards the north. Greenland. (*Arct. Man.*) Arctic America. (*R. Brown.*) Labrador. (*Waghorne.*) Newfoundland. (*Despreaux.*) On gneiss rocks, Tadousac, Que. (*A. T. Drummond.*) Summit of Mount Albert, Gasp   Co., Que.; on rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C. (*Macoun.*) On rocks, St. George Island, Behring Sea, June 10th, 1897. (*J. M. Macoun.*)

97. **U. Muhlenbergii**, (ACH.) TUCKERM.

Arctic America. (*Richardson.*) On rocks, Clearwater River, northern Labrador, July, 1896. (*A. P. Low.*) L'Anse au Clair, Labrador; Notre Dame Bay, Newfoundland. (*Waghorne.*) On rocks, Barren Grounds, Lat. 61°, Long. 104°, W. (*J. W. Tyrrell.*) On gneiss rocks, Tadousac, Que. (*A. T. Drummond.*) Granitic rocks, Nova Scotia. (*J. Moser.*) On rocks, Tobique River, N.B. (*G. U. Hay.*) On rocks, Jupiter River, Anticosti; at Halifax, N.S.; on rocks, mouth of Rideau River, near Ottawa, Ont.; on rocks at Kingsmere, near Chelsea, Que.; on rocks, Paugan Falls, Gatineau River, Que.; on Britton's Island, Gull Lake, Victoria Co., Ont.; quite common on rocks in Algonquin Park, Ont., July, 1900; at Otter Head, Lake Superior. (*Macoun.*) Kingston Mills, Ont., 1901. (*J. M. Macoun.*) Granite rocks, Stony Lake, Peterboro' Co., Ont. (*Thos. Walker.*) On rocks, Savanne, west of Lake Superior, Oct., 1893. (*Lawson.*)

98. **U. vellea**, (LINN.) NYL.

On rocks on high mountains.

Greenland. (*Arct. Man.*) Labrador; Shoal Point, Newfoundland. (*Waghorne.*) Newfoundland. (*Despreaux.*) On the face of a perpendicular cliff, King's Mountain, west of Chelsea, Que., May, 1897; very abundant on rocks, C  che Lake, Algonquin Park, Ont., June, 1900; on rocks, Lake Nipigon, Ont.; on rocks, Crow's Nest Pass, alt. 4,000 feet, Rocky Mountains; three miles below Hector, Rocky Mountains; at Pass Creek, Sproat's Landing, Columbia River, B.C.; Lake Mara, Sicamous, B.C.; on rocks, Moose Mountain, alt. 6,000 feet. (*Macoun.*) North shore of Lake Superior. (*Agassiz.*)

99. **U. Dillenii**, TUCKERM.

Newfoundland. (*Tuckerman.*) On rocks, Tobique River, N.B. (*G. U. Hay.*) North shore of Lake Superior. (*Agassiz.*) On the faces of perpendicular rocks, King's Mountain, west of Chelsea, Que., May, 1897; quite common on rocks, C  che Lake, Algonquin Park, Ont., June, 1900; on Britton's Island, Gull Lake, Victoria Co., Ont.; on rocks, northeast coast, Lake Superior. (*Macoun.*) On Rigaud Mountain, Vaudreuil Co., Que. *Rev. G. Ducharme.*

100. **U. angulata**, TUCKERM.

On rocks on the Pacific Coast.

Observatory Inlet, B.C. (*Herb. Hooker.*) On rocks, Parson's Mountain and Pier's farm, near Victoria, and on the summit of Mount Benson, Nanaimo, Vancouver Island, B.C. (*Macoun.*) On rocks, Chilliwack Valley, B.C. (*J. M. Macoun.*)

101. **U. Pennsylvanica**, HOFFM.

Greenland. (*Arct. Man.*) Arctic America. (*Richardson fide Tuckerman.*) Labrador. (*Waghorne.*)

102. **U. pustulata**, (LINN.) HOFFM. var. **papulosa**, TUCKERM.

Newfoundland. (*Despreaux.*) On rocks, Jupiter River, Anticosti; on dry rocks, Britton's Island, Gull Lake, Victoria Co., Ont.; Otter head, northeast coast of Lake Superior; very abundant on rocks, Algonquin Park, Ont., July, 1900. (*Macoun.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*)

103. **U. hirsuta**, (ACH.) STENH. var. **grisea**, FR.

Greenland. (*Branth.*) Newfoundland. (*Despreaux.*) Notre Dame Bay, Newfoundland (*Waghorne.*) On rocks, Tadousac, Que. (*A. T. Drummond.*)

104. **U. spodochoea**, HOFFM.

Greenland. (*Arct. Man.*) On sea cliff, Osprey Beach, Bay of Islands, Newfoundland, July 2nd, 1895. (*Waghorne.*)

13. **STICTA**, (Schreb.) FR.105. **S. amplissima**, (SCOP.) MASS.

On trunks of trees and rocks, quite common.

Arctic America. (*Richardson.*) Labrador. (*Waghorne.*) On trees at Canaan Forks and Never's Rapids, Queen's Co., N.B. (*J. Moser.*) On trees, Tobique River, N.B. (*G. U. Hay.*) Quite common at Baddeck and Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898; at Truro, N.S.; on trees, Jupiter River, Anticosti; at Ste. Anne des Monts River, Gaspé Co., Que.; on trunks in woods, Ottawa, Ont.; at Belleville, Ont.; on trees,

Foster's Flats, Niagara Falls, May 16, 1901 ; abundant on trunks of trees, Algonquin Park, Ont., June, 1900; at Goulais Point, east coast of Lake Superior. (*Macoun.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On trees at Credit Forks, near Toronto, and at Stony Lake, Peterboro' Co., Ont. (*James White.*)

106. **S. herbacea**, (HUDS.) ACH.

Labrador. (*Waghorne fide Eckfeldt.*)

107. **S. aurata**, (SMITH) ACH.

Labrador. (*Waghorne fide Eckfeldt.*)

108. **S. pulmonaria**, (LINN.) ACH.

On trees and rocks ; quite common.

L'Anse au Mort, Labrador. (*Waghorne.*) Newfoundland. (*Py-lae.*) On trunks, Bald Mountain, Tobique River, N.B. (*G. U. Hay.*) On *Empetrum nigrum*, Sable Island, N.S. There are no trees on the island and this species and *S. scorbiculata* grow close to the ground on dead stems ; on trees at Baddeck and in many other places, Cape Breton Island, N.S., July, 1898 ; on rocks at Truro, N.S.; on trees, Jupiter River, Anticosti ; Ste. Anne des Monts River, Gaspé Co., Que.; on trees at Ottawa, Ont. ; at Belleville, Ont.; on trees, Jordan Station, Lincoln Co., Ont., May 17, 1901 ; on a fallen log in a swamp at Guelph, Ont.; on tree trunks in Algonquin Park, Ont., June, 1900 ; on trees Current River, Lake Superior ; on trees, Hastings, Burrard Inlet, B.C. ; common on trees at Victoria, Nanaimo and Comox, Vancouver Island. (*Macoun.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On trees along the River Rouge, Que. (*D'Urban.*) On bases of beech trees at Edmonton, Ont. (*James White.*) On beech trees, Norton's Wood, Brampton, Ont. (*T. Walker.*) Alert Bay, Vancouver Island. (*Dr. G. M. Dawson.*)

Var. **linita**, NYL.

On islands in Behring Strait. (*Wright.*) On rocks on St. Paul Island, Behring Sea ; on Prince of Wales Island, Alaska. (*J.M. Macoun.*) On rocks near Victoria, Vancouver Island, 1875. (*Macoun.*)

6½

109. **S. Oregana**, TUCKERM.

On trees (high up) in woods.

At Hastings, Burrard Inlet, B.C.; on trees at Goldstream and Nanaimo, Vancouver Island. (*Macoun.*) Chilliwack Valley, B.C., 1901; on trees at Cape Beale, Vancouver Island; Port Etches and Prince of Wales Island, Alaska. (*J. M. Macoun.*) Alert Bay, Vancouver Island. (*Dr. G. M. Dawson.*)

110. **S. quercizans**, (MICHX.) ACH.

Northward to Canada, always infertile. (*Tuckerman.*) Labrador. (*Waghorne.*) We have no Canadian specimens in our herbarium.

111. **S. fuliginosa**, (DICKS.) ACH.

On rocks and trunks, British Columbia. (*Lyall.*) On rocks, Victoria Arm, near Victoria, Vancouver Island, May 6th, 1893. (*Macoun.*)

112. **S. limbata**, (SMITH) ACH.

Labrador. (*Waghorne fide Eckfeldt.*)

113. **S. crocata**, (LINN.) ACH.

On rocks among mosses, but occasionally on trees.

Quite common on trunks in woods at Baddeck, Cape Breton Island, N.S., July, 1898; on trees, Truro, N.S.; on rocks, Gaspé coast, Que.; on rocks, rare, Algonquin Park, Ont., July, 1900; on rocks, Thunder Bay, Lake Superior, and on rocks, Lake Nipigon, Ont.; on trees at Revelstoke, Columbia, River, and at Hastings, Burrard Inlet, B.C.; on rocks, Burnside Road, Victoria, Vancouver Island. (*Macoun.*)

114. **S. anthraspis**, ACH.

Among mosses on rocks, and on trunks.

On trunks, Mount Finlayson, and on Sea's farm, Victoria, and on rocks, Burnside Road, Victoria, Vancouver Island, 1893. (*Macoun.*) Deceit Bay and Redonda Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*)

115. **S. scorbiculata**, (SCOP.) ACH.

Among mosses on rocks and on tree trunks.

Greenland. (*Branth.*) Labrador. (*Waghorne.*) Newfoundland. (*Pylaie.*) On trunks, Canaan Forks, Queen's Co., N.B. (*J. Moxer.*) On rocks, Tadousac, Que. (*A. T. Drummond.*) On *Empetrum nigrum*, Sable Island, N.S., August 8th, 1899; on trees at Baddeck and Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898; on rocks, Truro, N.S.; on trees, Jupiter River, Anticosti; on trees, St. Anne des Monts River, Gaspé Co., Que.; on rocks, Algonquin Park, Ont., July, 1900; on trees at Revelstoke, B.C.; on rocks, Burnside Road, Victoria, Vancouver Island. (*Macoun.*) British Columbia. (*Lyll.*) On rocks, Pease Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*)

14. **NEPHROMA**, Ach.116. **N. arcticum**, (LINN.) FR.

Amongst mosses on rocks and on tree trunks in alpine and arctic regions.

Greenland. (*Retz.*) Arctic America. (*Richardson.*) On rocks, Clearwater Lake, Northern Labrador, 1896. (*A. P. Low.*) On rocks, Nain, Labrador. (*Dr. R. Bell.*) Labrador. (*Waghorne.*) Barren Grounds, Lat. 61° 13', Long. 104° W. (*J. W. Tyrrell.*) On rocks, Tadousac, Que. (*A. T. Drummond.*) Quite common on earth or rocks in woods, Smoky Mountain and Half-Way Brook, Cape Breton Island, N.S., Aug., 1898; on rocks, Becscie River, Anticosti; summit of Mount Albert, Gaspé Co., Que.; on rocks, Lake Agnes, and on earth in woods at Hector, Rocky Mountains; on rocks in Roger's Pass, Selkirk Mountains, B.C. (*Macoun.*) Northwest coast. (*Scouler.*) Cape Vancouver and Unimak Island, Behring Sea. (*J. M. Macoun.*)

117. **N. expallidum**, NYL.

On earth, dead wood, etc., in the arctic regions.

Labrador. (*Waghorne.*) Great Bear Lake. (*Richardson.*)

118. **N. tomentosum**, (HOFFM.) KÖRBER.

Tree trunks in mountain forests, and also on rocks.

On wood, Tobique River, N.B. (*G. U. Hay.*) On rocks at Shannondville, Hastings Co. Ont.; on trees North Bay, Lake

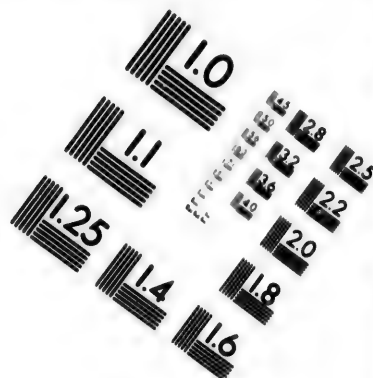
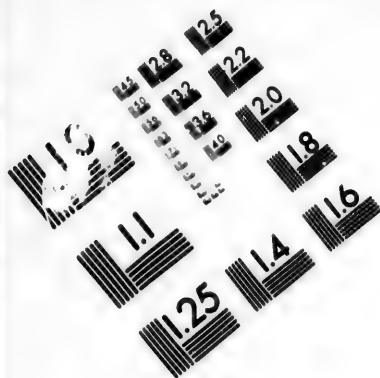
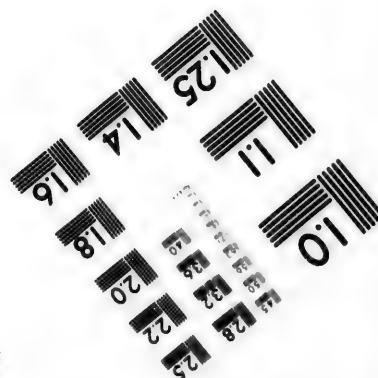
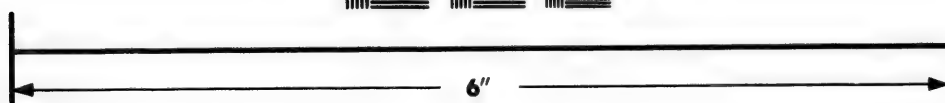
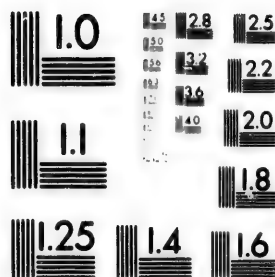


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Nipissing, Ont.; on both rocks and trunks of trees, Lake Nipigon, Ont., on perpendicular rocks, northeast shore Lake Superior; on trees, Manitoba House, Lake Manitoba, Man.; on trees and rocks at Revelstoke, B.C.; on rocks at Quesnel, Fraser River, B.C.; on trees at Hastings, Burrard Inlet, B.C.; common on trees around Victoria, Vancouver Island. (*Macoun.*) On rocks, Athabasca River, Atha. (*J. M. Macoun.*)

119. **N. Helveticum**, ACH.

On trees and rocks.

Arctic America. (*Richardson.*) On rocks, Ste. Anne des Monts River, Gaspé Co., Que.; on rocks, vicinity of Ottawa, Ont.; and on trees and rocks, Lake Nipigon; on rocks, Otter Slide Creek, Algonquin Park, Ont., July, 1900; on old logs, Hector, Rocky Mountains; on earth and rocks at Revelstoke, B.C.; and at Deer Park, Lower Arrow Lake, Columbia River, B.C. (*Macoun.*)

120. **N. lævigatum**, ACH.

On mossy rocks and on tree trunks.

East Ste. Modeste, Labrador; on rocks, Leading Tickle, Newfoundland. (*Waghorne.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On earth and sand, east end of Sable Island, N.S., Aug. 8, 1899; on rocks in a ravine, Big Intervale, and at McNeill's Harbour, and on trunks at Baddeck, Cape Breton Island, N.S., 1898; on trees, Jupiter River, Anticosti; on rocks, Cape Rosier, Gaspé Co., Que.; not uncommon on boulders around Ottawa, Ont.; on rocks, King's Mountain, near Chelsea, Que.; on boulders in woods at Belleville and Brighton, Ont.; on rocks and trunks, Algonquin Park, Ont., July, 1900; on rocks, Roger's Pass, Selkirk Mountains, B.C.; on rocks and earth, Bragg's Creek, and Moose Mountain, Rocky Mountains, alt. 6,000 feet; on rocks at Victoria and on Mount Benson, Vancouver Island. (*Macoun.*)

Var. **parile**, Nyl.

Forteau, Labrador. (*Waghorne.*) On rocks at Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On rocks, Big Intervale, Margaree and McNeill's Harbour, Cape Breton Island, N.S., Aug. 4,

1898; on boulders along Jupiter River, Anticosti; on boulders at King's Mountain, near Chelsea, Que.; on rocks, Catfish Lake, Algonquin Park, Ont., July, 1900; on rocks at Thunder Bay, Lake Superior and along Lake Nipigon; on rocks at Deer Park and Pass Creek, Columbia River; on rocks at Sicamous, B.C.; on rocks, Moose Mountain, alt. 6,000 feet, Rocky Mountains. (*Macoun.*)

121. **N. Lusitanicum**, SCHÆR.

On rocks, trees and bushes.

On rocks, Notre Dame Bay, Newfoundland. (*Waghorne.*) On rotten wood at Revelstoke, Columbia River, B.C.; on rocks by the sea, Victoria Arm and Cadboro Bay, Victoria, and in same situation at Qualicum and Comox, Vancouver Island. (*Macoun.*)

15. **PELTIGERA**, (Willd.) Fée.

122 **P. venosa**, (LINN.) HOFFM.

On damp earth by roadsides, rivers, lakes and brooks.

Greenland. (*Vahl.*) Forteau, Labrador. (*Waghorne.*) On earth, Ste. Anne des Monts River, Gaspé Co., Que.; along the Lièvre River above the falls at Buckingham, Que.; Gull River, at the head of Moore's Lake, Victoria Co., Ont.; five miles up the Kaministiquia River, Lake Superior; on earth along Jumping Pound Creek, Rocky Mountains; at Quesnel, Fraser River, B.C.; in Albert Cañon, Selkirk Mountains, B.C.; Hastings, Burrard Inlet, B.C.; by roadsides at Victoria, Vancouver Island. (*Macoun.*) Northwest coast. (*Menzies.*) Behring Strait. (*Wright.*)

123. **P. aphthosa**, (LINN.) HOFFM.

On rocks amongst mosses, on old logs and earth.

Greenland. (*Arct. Man.*) Throughout Arctic America. (*Richardson.*) Fort Chimo and Clearwater Lake, Labrador. (*A. P. Low.*) On rocks, Eagle River, Newfoundland. (*Waghorne.*) At Fort Norman, Mackenzie River. (*Miss E. Taylor.*) Along the Tobique River, N.B. (*G. U. Hay.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) In woods along the Rouge River, Argenteuil Co., Que. (*D'Urban.*) Sides of hummocks in swamps, Edmonton, Ont. (*James White.*) Rotten logs, Morton's swamp, Brampton, Ont. (*Thos. Walker.*) Shores of Lake Super-

rior. (*Agassiz.*) Quite common at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; on earth at Truro, N.S.; on the bases of trees, Jupiter River, Anticosti; on earth along the Gaspé coast; on earth at Ottawa, Ont.; on logs at Carleton Place, Ont.; on earth at Belleville, Ont.; on a decaying log at Guelph, Ont.; common in Algonquin Park, Ont., 1900; on mossy rocks, Rideau River, Lake Superior; in mossy woods, Lake Nipigon; on earth in woods, Duck Mountain, Man.; on earth along Jumping Pound Creek, Rocky Mountains; on old logs, Revelstoke, B.C.; on rocks, North Arm, Burrard Inlet, B.C.; on rocks, Burnside Road, Victoria, Vancouver Island. (*Macoun.*) Mossy rocks, Lake Winnipeg; Chilliwack Valley, B.C.; St. Paul Island, Behring Sea; and Port Etches, Alaska. (*J. M. Macoun.*) Mountains east of Adam's Lake, B.C., alt. 3,300 feet, (*Dr. G. M. Dawson.*)

124. ***P. horizontalis***, (LINN.) HOFFM.

On mossy rocks, Tobique River, N.B. (*G. U. Hay.*) On rocks in woods, Margaree, Cape Breton Island, N.S., July, 1898; on rocks, Ste. Anne des Monts River, Gaspé Co., Que.; on rocks and logs at Ottawa and Carleton Place, Ont.; at Shannonville, Hastings Co., Ont.; on old logs, Algonquin Park, Ont., June, 1900; on rocks near Otter Head, Lake Superior, and on rocks, Lake Nipigon, Ont.; on rocks, shore of Kootenay Lake, B.C.; on rocks and earth in woods at Revelstoke, B.C.; on old logs, Roger's Pass, Selkirk Mountains, B.C. (*Macoun.*) Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*) Moist rocks amongst mosses, shores of Behring Strait. (*Wright.*)

125. ***P. polydactyla***, NECK.) HOFFM.

On rocks and trunks amongst mosses.

Greenland. (*Branth.*) L'Anse au Mort, Labrador; Bay of Islands, Newfoundland. (*Waghorne.*) Moist rocks, Tobique River, N.B. (*G. U. Hay.*) On logs in woods, Rivière Rouge, Argenteuil Co., Que. (*D'Urban.*) On ground at Edmonton, Ont., (*James White.*) On boulders in woods at Baddeck, Cape Breton Island, N.S., July, 1898; in woods, Gaspé Co., Que.; on rocks, Algonquin Park, Ont., June, 1900; on old logs, Albert Cañon, Selkirk Mountains, B.C.; on rocks at Hector, Rocky Mountains;

on old logs at Hastings, Burrard Inlet, B.C.; on earth at Comox, Vancouver Island. (*Macoun.*) Crow's Nest Pass, Rocky Mountains. (*Dr. G. M. Dawson.*)

126. ***P. scutata***, (DICKS.) LEIGHT.

On earth, rocks and trees, among mosses.

British Columbia. (*Dr. Lyall.*) On earth at Yale, Fraser River, B.C.; at Victoria and Comox, Vancouver Island. (*Macoun.*) Harbledown Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*) Behring Island, Behring Sea. (*J. M. Macoun.*)

127. ***P. pulverulenta***, (TAYL.) NYL.

Greenland. (*Brentel.*) Clearwater Lake, Labrador, July, 1896. (*A. P. Low.*) Capstan Island and L'Anse au Clair, Labrador. (*Waghorne.*) On rocks, Smoky Mountain, Cape Breton Island, N.S., Aug. 3rd, 1898; on rocks, Algonquin Park, Ont., June, 1900. (*Macoun.*) Mouth of Skeena River, B.C.; Port Etches and Prince of Wales Island, Alaska. (*J. M. Macoun.*) On rocks, Kotzebue Sound, Alaska. (*Herb. Babington.*)

128. ***P. malacea***, (ACH.) FR.

On earth, Greenland. (*Branth.*) Bay Bull's Arm and Middle Arm, Newfoundland. (*Waghorne.*) On earth at Tadousac, Que. (*A. T. Drummond.*)

129. ***P. rufescens***, (NECK.) HOFFM.

On earth, rocks and trunks, among mosses.

Greenland. (*Arct. Man.*) Arctic America. (*Richardson.*) On earth, Forteau and Red Bay, Labrador. (*Waghorne.*) On the ground and on mossy hummocks, Edmonton and Credit Forks, Ont. (*James White.*) On rocks in woods, Margaree, Cape Breton Island, N.S., July 16th, 1898; on earth at Truro, N.S.; on earth, rocks and trees at Ottawa, Ont.; on rocks, Lake Nipigon; on earth, Thunder Bay, Lake Superior; on earth, Manitoba House, Lake Manitoba, Man.; on earth in woods at Revelstoke, B.C.; on earth at Hector, Rocky Mountains, B.C.; at Quesnel, B.C.; and on rocks, Burnside Road, Victoria, Vancouver Island. (*Macoun.*)

130. *P. canina*, (LINN.) HOFFM.

On earth, rocks and mossy trunks.

Greenland. (*Branth.*) Arctic America. (*Richardson.*) Canada. (*Agassiz.*) Digge's Island and Mansfield Island, Hudson Strait. (*Dr. R. Bell.*) On earth, Forteau, Labrador; also Birchy Cove, Newfoundland. (*Waghorne.*) Drury's Cove, St. John's and Tobique rivers, N.B. (*G. U. Hay.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On a dead log near Kingston, Ont. (*Thos. Walker.*) On sandy earth, east end of Sable Island, N.S., Aug. 8th, 1899; quite common at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; roots of trees, Jupiter River, Anticosti; on rocks near Meech's Lake, near Chelsea, Que.; common at Ottawa, Ont.; on logs in woods, Carleton Place, Ont.; on earth in woods, Belleville, Hastings Co., Ont.; on earth in woods, Jordan Station, Lincoln Co., and Pelee Point, Essex Co., May, 1901; on old logs, Algonquin Park, Ont., June, 1900; on earth, Lake Nipigon, Ont.; on earth and logs at Jumping Pound Creek and Crow's Nest Pass, Rocky Mountains; on earth in woods at Revelstoke and Donald, B.C.; on rocks and trees, Burnside Road, Victoria, Vancouver Island. (*Macoun.*) Deceit Bay, B.C., and Comox, Vancouver Island. (*Dr. G. M. Dawson.*) Kadiak Island, Alaska; St. Paul Island and Unalaska, Behring Sea. (*J. M. Macoun.*)

Var. *spongiosa*, TUCKERM.

On earth, Eagle River, Newfoundland. (*Waghorne.*) On earth, Algonquin Park, Ont., June, 1900; on mossy logs along the Fraser River at Yale, B.C., 1872. (*Macoun.*) Middleton Island, Alaska, Lat. 59° 30'; St. Paul Island, St. George Island and Unalaska, Behring Sea. (*J. M. Macoun.*)

Var. *membranacea*, ACH.

Northwest coast. (*Douglas.*) Carmanah, near Cape Beale, Vancouver Island; and at Port Etches, Alaska, 1892. (*J. M. Macoun.*)

Var. *spuria*, ACH.

Meadows in the Bay of Islands, Newfoundland. (*Waghorne.*) Clearwater Lake, Labrador, July, 1896. (*A. P. Low.*) In a dense

tuft of moss which it divided, St. Paul Island, Behring Sea, June, 1897. (*J. M. Macoun.*) On earth, near Victoria, Vancouver Island, May, 1875. (*Macoun.*)

Var. *sorediata*, SCHÆR.

Clode Sound, Newfoundland. (*Waghorne.*) On earth along the Tobique River, N.B. (*G. U. Hay.*) On banks of islands in Behring Strait. (*Wright.*)

16. *SOLORINA*, Ach.

181. *S. crocea*, (LINN.) ACH.

On earth in alpine districts.

Greenland. (*Branth.*) West Greenland. (*Rosenvinge.*) On earth, King George's Sound Baffin Bay, 1897; Cape Chudleigh, Hudson Strait. (*Dr. R. Bell.*) Labrador. (*Wenck.*) Venison Tickle, Labrador. (*Waghorne.*) North of Point Lake, Barren Grounds. (*Richardson.*) On earth at Banff, on Moose Mountain, Elbow River, at Lake Agnes, and on rocks, summit of mountain, north of Kicking Horse Lake, Rocky Mountains; on earth, mountains north of Griffin Lake, Gold Range, B.C.; on earth, Sky Line mine, Kootenay Lake, B.C.; on rocks, summit of Mount Benson, Nanaimo, Vancouver Island. (*Macoun.*) St. Paul Island, Behring Sea. (*J. M. Macoun.*) Shores of Behring Strait. (*Wright.*)

182. *S. saccata*, (LINN.) ACH.

On earth, especially in calcareous regions.

Greenland. (*Vahl.*) L'Anse au Clair, Labrador; Benoit's Cove and John's Beach, Newfoundland. (*Waghorne.*) Newfoundland. (*Pylae.*) Great Bear Lake. (*Herb. Hooker.*) On earth, Tobique River, N.B. (*G. U. Hay.*) Ste. Anne des Monts River, Gaspé Co., Que.; crevices of limestone rocks, Rockcliffe Park, Ottawa, Ont.; on limestone rocks, Heeley's Falls, Northumberland Co., Ont.; on rocks at Michipicoten, east side of Lake Superior, and on earth, Lake Nipigon; on earth at Morley, Jumping Pound Creek, and at Hector, both by the torrent and high up on the mountain, Rocky Mountains; on House Mountain, near Little Slave Lake, Atha. (*Macoun.*) Along Clearwater River, above

Fort McMurray, Atha. (*J. M. Macoun.*) Shores of Behring Strait. (*Wright.*)

Var. **spongiosa**, NYL.

Arctic America and Greenland. (*Tuckerman.*) Newfoundland. (*Nylander.*) On earth in crevices of limestone rocks, Gunn River, Anticosti, Aug. 29th, 1883; on earth, Moose Mountain, alt. 7,000 feet, Rocky Mountains, July 2nd, 1897. (*Macoun.*) Islands at Behring Strait. (*Wright.*)

17. **PHYCMA**, Mass.

133. **P. luridum**, (MONT.) TUCKERM.

A single specimen collected in Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*)

18. **PANNARIA**, Delis.

134. **P. lanuginosa**, (ACH.) KÆRB.

On shaded perpendicular rocks.

Canada. (*Drummond.*) Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) On limestone rocks in ravines at Margaree, Cape Breton Island, N.S., July, 898; on limestone rocks west of Hull, Que.; under ledges in woods near Experimental Farm, Ottawa, Ont.; on rocks, Algonquin Park, Ont., June, 1900. (*Macoun.*) On Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On rocks, Kingston Mills, Ont., 1901. (*J. M. Macoun.*) On sandstone rocks, Credit Forks, Ont. (*Thos. Walker.*)

135. **P. hypnorum**, (HOFFM.) KÆRB.

On the earth growing over mosses and twigs in alpine districts.

Greenland. (*Branth.*) Arctic America. (*Richardson.*) Newfoundland. (*Despreaux.*) Venison Tickle, Labrador; Half-Way Point, Newfoundland. (*Waghornè.*) On earth, South West Point, Anticosti; on earth in woods at Banff and on the summit of Sulphur Mountain, at Hector, on Moose Mountain and in the Crow's Nest Pass, Rocky Mountains; on earth in Roger's Pass, Selkirk Mountains, B.C.; on rocks, Cedar Hill, near Victoria, and on rocks, Mount Benson, Nanaimo, Vancouver Island. (*Macoun.*) On earth, Unalaska, Behring Sea. (*J. M. Macoun.*)

136. **P. rubiginosa**, (THUNB.) DELIS.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On trees, Ste. Anne des Monts River, Gaspé Co., Que. August 18th, 1882. (*Macoun.*)

Var. **conoplea**, FR.

On rocks at Truro, N.S., June, 1883; on the bases of trees, North Bay, Lake Nipissing, May, 1884. (*Macoun.*)

137. **P. leucostiota**, TUCKERM.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On trees at Madaline River and on rocks, Ste. Anne des Monts River, Gaspé Co., Que.; on boulders in McKay's woods, Ottawa, Ont.; on rocks in Roger's Pass, Selkirk Mountains, B.C. (*Macoun.*)

138. **P. Hookeri**, (SM.) TH. FR.

On rocks, Greenland. (*Vahl.*)

139. **P. brunnea**, (SW.) MASS

Greenland. (*Vahl.*) On earth, Arctic America. (*Richardson.*) On earth, Seal Lake, Labrador. (*A. P. Low.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On earth at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; on earth, Jupiter River, Anticosti; on earth near Cape Rosier, Gaspé Peninsula, Que.; on earth, summit of Mount Albert, Gaspé Co., Que.; on earth, Tunnel Mountain, Banff, Rocky Mountains, 1891; on earth and logs at Hector, and on Moose Mountain, Elbow River, and in Crow's Nest Pass, Rocky Mountains; on earth, Albert Cañon, Selkirk Mountains, B.C.; on earth at Hastings, Burrard Inlet, B.C. (*Macoun.*) Islands of Behring Sea. (*Wright.*)

140. **P. microphylla**, (SW.) DELIS.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On rocks, Greenland. (*Branth.*) On earth, Salt Lake, Anticosti; on damp rocks, Meech's Lake and on King's Mountain, near Chelsea, Que.; on rocks, Lake Nipigon, Ont.; also on stones at Ottawa, Ont.

141. **P. lepidiota**, TH. FR.

On earth and rocks, Greenland. (*Vahl.*) Rope Cove, in the Bay of Islands, Newfoundland. (*Waghorne.*) On rocks, Half-Way Creek, and on trunks at Margaree, Cape Breton Island, N.S., 1898; on earth, Salt Lake, Anticosti; on rocks, north shore of Lake Superior, and on the bases of trees, Lake Nipigon; on earth along Jumping Pound Creek, and on Mount Forget-me-not, Elbow River, Rocky Mountains, alt. 6,500 feet, 1897; on rocks by the sea, Craigflower, near Victoria, Vancouver Island. (*Macoun.*)

Var. **coralliphora**, TUCKERM.

On rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C.; on rocks near Victoria, Vancouver Island. (*Macoun.*)

142. **P. carnosa**, (DICKS.) TUCKERM.

On rocks among mosses.

Great Bear Lake, Arctic America. (*Richardson.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

143. **P. tryptophylla**, (ACH.) MASS.

On trunks of trees and stones.

On bark, Greenland. (*Branth.*) Rope Cove, Lark Harbour, Wild Cove and Shoal Point, Newfoundland. (*Waghorne.*) On dead wood, Gaspé Co., Que.; Mount Erskine, Salt Spring Island, Gulf of Georgia, B.C. (*Macoun.*)

144. **P. Waghornei**, ECKFELDT, Bull. Torr. Bot. Club, Vol. XXII., 246, 1895.

On turfy earth. Evidently a well marked species and not closely related to any other. Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

145. **P. plumbea**, (LIGHTF.) DELIS.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On a birch stump and on exposed rocks, Grand Manan, N.B. (*Willey.*)

146. **P. nigra**, (HUDS.) NYL.

On calcareous rocks, Ste. Anne des Monts River, Gaspé Co., Que.; on limestone rocks, Rockcliffe Park and many other places

around Ottawa, Ont. (*Macoun.*) On rocks, Tadousac, Que. (*A. T. Drummond.*)

147. **P. Macounii**, TUCKERM. MS.

On calcareous rocks, Jupiter River, Anticosti, Que., Aug. 23rd, 1883. (*Macoun.*)

19. **EPHEBE, Fr., Born.**

148. **E. pubescens**, FR.

On rocks, Greenland. (*Branth.*) On rocks, summit of Mount Benson, near Nanaimo, Vancouver Island, June 8, 1887. (*Macoun.*)

20. **OMPHALARIA, Dur. & Mont.**

149. **O. phyllisca**, (WAHL.) TUCKERM.

Granite rocks, north shore of Lake Superior. (*Agassiz.*)

21. **COLLEMA, Hoffm.**

150. **C. myriococcum**, ACH.

On moss on rocks in a ravine at Margaree, Cape Breton Island, N.S., July, 1898; growing over mosses on limestone rocks, Rockcliffe Park, Ottawa, Ont.; on perpendicular cliffs, King's Mountain, near Chelsea, Que., 1897; at Lake Nipigon, Ont. (*Macoun.*)

151. **C. pycnocarpum**, NYL.

On trunks, Durham, Que. (*A. T. Drummond.*) On trunks in woods, Brighton, Northumberland Co., Ont., 1893. (*Macoun.*)

152. **C. cyrtaspis**, TUCKERM.

On earth at Revelstoke, B.C., May 5th, 1890; on earth, Spence's Bridge, B.C., May 30th, 1889. (*Macoun.*)

153. **C. leptaleum**, TUCKERM.

On trees at Truro, N.S., June, 1883; on ash trees in a swamp at Baddeck, Cape Breton Island, N.S., July, 1898. (*Macoun.*)

154. *C. flaccidum*, ACH.

On rocks and trunks. Greenland. (*Branth.*) Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) On trunks, Tadousac, Que. (*A. T. Drummond.*) On spruce trees, Salt Lake, Anticosti; on earth Gaspé Basin, and along Ste. Anne des Monts River, Gaspé Co., Que.; on trees, Sudbury Junction and on rocks, Lake Nipigon, Ont.; on trunks in woods, Seymour West, Northumberland Co., Ont.; on rocks at Morley, Rocky Mountains; on trees at Revelstoke, Columbia River, B.C.; on rocks at Spence's Bridge and Agassiz, B.C.; on bark of trees, Burnside Road, Victoria, Vancouver Island. (*Macoun.*)

155. *C. nigrescens*, (HUDS.) ACH.

On trees. Greenland. (*Lindsay.*) On bark of ash trees, Ste. Anne des Monts River, Gaspé Co., Que.; on ash trees in a swamp at Baddeck, Cape Breton Island, N.S., July, 1898; on trees in Algonquin Park, Ont., June, 1900; on trees at Sudbury Junction, Ont.; ash trees, Blackwater River, Lake Nipigon, Ont.; on rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C., June 8th, 1890. (*Macoun.*)

156. *C. pulposum*, (BERNH.) NYL.

On earth, Greenland. (*Branth.*) On earth at Tadousac, Que. (*A. T. Drummond.*) On earth, Ste. Anne des Monts River, Gaspé Co., Que.; on limestone rocks, Rockcliffe Park, Ottawa, Ont.; on earth at Belleville, Hastings Co., Ont.; on the bases of trees, Seymour, Northumberland Co., Ont.; on calcareous earth along Old Wives' Creek, Assa., 1895; on earth, Kananaskis Falls and Jumping Pound Creek, Rocky Mountains; on earth at Revelstoke, Columbia River, B.C.; Telegraph Trail, west of Quesnel, B.C.; on earth at Victoria, Vancouver Island. (*Macoun.*) Cape Lisburne, Alaska. (*Rothrock.*)

157. *C. tenax*, (SW.) ACH.

On earth in calcareous soils.

On earth west of Hull, Que., and in Rockcliffe Park, Ottawa, Ont.; on limestone rocks along the Moira River at Belleville, Ont.; on rocks at Port Arthur, shore of Lake Superior; on earth, Cypress Hills, Assa.; on earth at Otterburne, Manitoba. (*Macoun.*)

158. *C. crispum*, BORR.

On earth, Canada. (*A. T. Drummond.*) On calcareous earth, west of Hull and on King's Mountain near Chelsea, Que. ; on earth at Quesnel, B.C., June, 1875. (*Macoun.*)

159. *C. limosum*, ACH.

On calcareous earth in a cutting west of Hull, Que.; very rare; on earth in wet soil at Morley, Rocky Mountains; on earth on wet rocks near Victoria, Vancouver Island. (*Macoun.*)

160. *C. melænum*, ACH.

Calcareous and other rocks.

Greenland. (*Vahl.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On rocks, Lake Nipigon, Ont., July 9th, 1884. Named by Tuckerman. (*Macoun.*)

Var. *polycarpum*, SCHÆR.

Islands of Behring Strait. (*Wright.*)

161. *C. multipartitum*, (SM.) TAYL.

On calcareous rocks near Stewart's Lake, northern British Columbia, June 25th, 1875. (*Macoun.*)

162. *C. furvum*, (ACH.) NYL.

On calcareous rocks.

L'Anse au Mort, Labrador. (*Waghorne.*) On rocks, Tadousac, Que. (*A. T. Drummond.*) Along the shores of Lake Nipigon, Ont.; on stones, Cypress Hills, Assa; found also in Canada by Tuckerman. (*Macoun.*)

163. *C. pustulatum*, ACH.

Calcareous rocks, Rocky Mountains, Lat. 54°-56°. (*Drummond.*) On calcareous rocks along Jumping Pound Creek, Rocky Mountains, June, 1897; on bark of trees, Burnside Road, near Victoria, Vancouver Island, May 10th, 1893. (*Macoun.*)

164. *C. flocculosa*, NYL.

On limestone rocks below Governor's Bay, Rockcliffe Park, Ottawa, Ont.; on naked limestone rocks in woods south of the Aylmer Electric Railway, west of Hull, Que.; very rare, May 16th, 1896. (*Macoun.*)

22. *LEPTOGIUM*, Fr., Nyl.**165. *L. muscicola*, (Sw.) Fr.**

Growing over mosses on rocks on mountains.

On rocks, Tunnel Mountain, Banff, and on mosses, Mt. Forget-me-not, Rocky Mountains; on rocks by the Fraser River at Yale B.C.; on rocks along the Burnside Road, Victoria, Vancouver Island. (*Macoun.*) Islands in Behring Strait. (*Wright.*)

166. *L. albociliatum*, DESMAZ.

Among mosses on rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C., June 6th, 1890. (*Macoun.*)

167. *L. tenuissimum*, (DICKS.) KÆRB.

On sandy banks among mosses.

On old rails along the Richmond Road, Ottawa, Ont., April, 1896; on earth among mosses, northern British Columbia, June, 1875. (*Macoun.*) Islands of Behring Strait. (*Wright.*)

168. *L. minutissimum*, (FLÆRK) MASS.

On moss on rocks, summit of Mount Benson, Nanaimo, Vancouver Island, July, 1893, alt. 3,000 ft. (*Macoun.*)

169. *L. lacerum*, (Sw.) Fr.

Among mosses on rocks.

Greenland. (*Branth.*) On rocks, Canada. (*A. T. Drummond.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Along Ste. Anne des Monts River, Gaspé Co., Que.; on limestone rocks Rockcliffe, Ottawa, Ont.; on rocks along the Moira at Belleville, Hastings Co., Ont.; on rocks, Lake Nipigon, and at Thunder Bay, Lake Superior; on rocks at Hector, Rocky Mountains; at Deer

Park, Lower Arrow Lake, Columbia River, B.C.; on rocks, at Yale, Fraser River, B.C.; at Lytton and Hastings, B.C. (*Macoun.*) On rocks at London, Ont. (*J. Dearness.*)

170. **L. Californicum**, TUCKERM.

On rocks among mosses and on the bark of oak trees, Burnside Road, near Victoria, and on rocks, Parson's Mountain, Vancouver Island; on rocks, Mount Erskine Salt Spring Island, Gulf of Georgia, B.C. May 9th 1887. (*Macoun.*)

171. **L. palmatum**, (HUDS.) MONT.

On earth and rocks among mosses.

On rocks, Six-mile Creek, Selkirk Mountains, and on rocks at Sicamous, B.C.; on rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C.; on rocks at Donald, Columbia River, B.C.; on rocks at Yale and Moodyville, and near high-water mark on rocks, North Arm, Burrard Inlet, B.C.; on rocks, Burnside Road, Victoria, and at Comox, Vancouver Island. (*Macoun.*) Forward Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*) British Columbia. (*Lyall.*)

172. **L. pulchellum**, (ACH.) NYL.

On tree-trunks and rocks.

On trees at Beechwood, Ottawa, Ont., and on trees in woods at Belleville, Hastings Co., Ont.; on tree-trunks in woods, Seymour West, Northumberland Co., Ont.; on trees, Burnside Road, Victoria, Vancouver Island, 1893. (*Macoun.*)

173. **L. Tremelloides**, (LINN. f.) FR.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On rocks and trunks in swamps, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On trunks and on old logs at Baddeck, Margaree, and Smoky Mountain, Cape Breton Island, N.S., July, 1898; on rocks and trees at Truro, N.S.; on trees along Ste. Anne des Monts River, Gaspé Co., Que.; on trees and rocks, Rockcliffe and Beechwood, Ottawa Ont.; on trees and rocks at Belleville, Hastings Co., and on Gibson's Mountain, Prince Edward Co., Ont.; on rocks, Algonquin Park, Ont., June, 1900; on rocks near Otter Head, east coast of Lake Superior; on stones, Roger's

Pass, Selkirk Mountains, B.C. (*Macoun.*) Portage between South Fowl Lake and Pigeon River, Ont. (*Fink.*) Salmon Creek, Juneau, Alaska. (*Miss G. Cooley.*)

174. **L. dactylinum**, TUCKERM.

On rocks by the sea at Craigflower, near Victoria, Vancouver Island, May 30th, 1893. (*Macoun.*)

175. **L. chloromelum**, (Sw.) NYL.

On trunks of trees and on rocks.

On bark, Wild Cove, Newfoundland. (*Waghorne.*) At Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On rocks, Tobique River, N.B. (*G. U. Hay.*) Canada. (*A. T. Drummond.*) On trunks at Baddeck, Cape Breton Island, N.S., July, 1898; on trunks, Central Ontario Junction, Hastings Co., Ont.; on rocks, Lake Nipigon, Ont.; on trunks, Seymour West, Northumberland Co., Ont.; on old rails at Aylmer, Que., and on rocks, King's Mountain, near Chelsea, Que.; on black ash trunks, Algonquin Park, Ont., June, 1900. (*Macoun.*)

176. **L. intermedium**, ARNOLD.

On birch bark, Middle Arm, Newfoundland. (*Waghorne.*)

177. **L. myochroum**, (EHRH.) TUCKERM.

On trees and rocks.

Greenland. (*Branth.*) Great Bear Lake, Arctic America. (*Richardson.*) On rocks, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On rocks and trees at Ottawa, Ont.; on rocks and trees at Shannonville, Hastings Co., Ont.; on trees at Brighton and Seymour West, Northumberland Co., Ont.; on trees, Algonquin Park, Ont., June, 1900; Thunder Bay, Lake Superior; on rocks, Crow's Nest Pass, alt. 4,000 feet; on balsam poplar trunks along Jumping Pound Creek, and on rocks, Mount Forget-me-not, alt. 6,000 feet, Rocky Mountains; at Yale, Fraser River, B.C.; on rocks along the Burnside Road, near Victoria, Vancouver Island. (*Macoun.*)

178. **L. respulinum**, ACH.

On limestone rocks at Rockcliffe Park, Ottawa, Ont., April 16th, 1891. (*Macoun.*)

23. **PLACODIUM, (DC.) Naeg. & Hepp.**179. **P. elegans, (LINK.) DC.**

On rocks.

Greenland. (*Arct. Man.*) Arctic America. (*Richardson.*) Melville Island. (*R. Brown.*) Nottingham Island, Hudson Strait. (*Dr. R. Bell.*) On rocks, Fort Chimo, Ungava Bay, Labrador, Aug., 1896. (*A. P. Low.*) Newfoundland. (*Pylaie.*) St. John, N.B. (*J. Moser.*) Southwest Point, Anticosti, Que.; falls of the Madeline River, Gaspé Co., Que.; on a large boulder, Governor's Bay, Rockcliffe Park, Ottawa, Ont.; abundant around Lake Nipigon and Lake Superior; on rocks, Cypress Hills, Assa., and at the "elbow" of the South Saskatchewan, Assa.; in woods at Banff and along Jumping Pound Creek, Rocky Mountains; at Deer Park, Lower Arrow Lake, Columbia River, B.C.; Mount Benson, near Nanaimo, Vancouver Island. (*Macoun.*) Buffalo Lake, Lat. 56°, north of Ile à la Crosse, Atha. (*J. M. Macoun.*) Harbledown Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*) Islands of Behring Strait. (*Wright.*) Alaska. (*Turner.*)

Var. **trachyphyllum, TUCKERM.**

On boulders in the Cypress Hills, Assa., June 10th, 1884. (*J. M. Macoun.*)

180. **P. murorum, (HOFFM.) DC.**

On rocks, Greenland. (*Arct. Man.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On rocks, Arctic America. (*Richardson.*) On sandstone rocks, "elbow" of South Saskatchewan, Assa., July 18th, 1879; abundant on sandstone rocks, Wood Mountain, Assa., June 10th, 1895. (*Macoun.*)

181. **P. fulgens, (Sw.) DC.**

On calcareous soils, Greenland. (*Vahl.*) On earth along Old Wives' Creek, Assa., May 23rd, 1895. (*Macoun.*)

182. **P. cirrochroum, (ACH.) HEPP.**

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

183. **P. aurantiacum**, (LIGHTF.) NAEG. & HEPP.

On dead wood, trees and rocks.

Greenland. (*Arct. Man.*) Arctic America. (*Richardson.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On driftwood, Gunn River, Anticosti, Que.; on bark of trees, Truro, N.S.; on rocks and trees, not rare, around Ottawa, Ont.; on bark of trees, Lake Nipigon, Ont.; on *Alnus rubra*, along the sea at Comox, Vancouver Island. (*Macoun.*) On driftwood, Blankensop Bay, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*)

184. **P. rupestre**, (SCOP.) BR. & ROSTR.

On calcareous rocks, St. Anne des Monts River, Gaspé Co., Que., Aug. 17th, 1882. (*Macoun.*)

185. **P. cerinum**, (HEDW.) NAEG. & HEPP.

Common on trees, dead wood and mosses.

Greenland. (*Arct. Man.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On trunks, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) Arctic America. (*Richardson.*) On bark of various trees at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; on birch bark, Algonquin Park, Ont., June, 1900; on bark of aspen poplar at Belleville, Hastings Co., Ont.; along Nipigon River, Ont.; on the Porcupine Hills, Man., and in the Moose Mountains, Assa.; along Red Deer River, Man.; Athabasca River, Lat. 55°; on moss on rocks at Lytton, B.C.; on bark of maples at Hastings, Burrard Inlet, B.C.; on bark at Comox, Vancouver Island. (*Macoun.*)

Var. **pyracea**, NYL.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On old cedar trunks in Dow's swamp, Ottawa, Ont., May 2nd, 1896; on bark of small maples at Hastings, British Columbia, April, 1889. (*Macoun.*) On bark, Nagai Island, Shumigan Group, Alaska, Sept. 18th, 1892. (*J. M. Macoun.*) Icy Cape, Arctic Ocean, Alaska. (*Rothrock.*)

Var. **pyracea**, NYL. forma, **ulmicola**, DC.

Caloplaca pyracea, f. *ulmicola*, DC.

Very abundant on dead *Negundo aceroides* on the banks of Old Wives' Creek, near Old Wives' Lake, Assa., and at the forks of the creek, June 2nd, 1895. (*Macoun.*)

186. **P. Jungermanniae**, (VAHL) TUCKERM.

On earth and upon mosses.

Greenland. (*Vahl.*) Arctic America, Great Bear Lake. (*Richardson.*) On earth in Bow River Pass at Banff, and on Castle Mountain, Rocky Mountains; on moss along Bragg's Creek and on Moose Mountain, Rocky Mountains; on earth, Telegraph Trail, B.C. (*Macoun.*) On earth Unalaska Island, Behring Sea, Aug., 1891. (*J. M. Macoun.*) Islands of Behring Strait. (*Wright.*)

187. **P. nivale**, (KÆRB.) TUCKERM.

On mosses, Greenland. (*Brentel.*)

188. **P. sinapispermum**, (AUCT.) HEPP.

On mosses in arctic and alpine regions.

Greenland. (*Vahl.*) On earth, Clearwater Lake, Labrador, 1896. (*A. P. Low.*) On earth along Jumping Pound Creek, Rocky Mountains, June, 1897; on earth in the Bow River Pass, Rocky Mountains; along the Telegraph Trail, Blackwater River, B.C. (*Macoun.*) Islands of Behring Strait. (*Wright.*)

189. **P. tetraspora**, (NYL.)

On earth in Greenland. (*Branth.*) On earth, Moose Mountain, Rocky Mountains, alt. 6,500 feet, July 3rd, 1897. (*Macoun.*)

190. **P. ferrugineum**, (HUDS.) HEPP.

On dead wood, rocks and mosses.

Greenland. (*Vahl.*) In Alaska. (*Dr. Kellogg.*) On bark of black ash trees in a swamp at Baddeck, Cape Breton Island, N.S., July, 1898; on earth and rocks at Banff, Rocky Mountains; on earth at Hector, Rocky Mountains; on poplar bark, Sea's farm, near Victoria, Vancouver Island. (*Macoun.*) On earth, St. Paul Island and Unalaska Island, Behring Sea. (*J. M. Macoun.*) Port Clarence, Alaska, and elsewhere; not rare. (*Rothrock.*)

Var. **discolor**, WILLEY.

On ash bark at the mouth of the Madeline River, Gaspé Co., Aug. 5th, 1882; on black ash bark at Baddeck, Cape Breton Island, N.S., July 9th, 1898. (*Macoun.*)

191. **P. crenulatum**, (WAHLENB.) TUCKERM.

Maritime rocks, Greenland. (*Vahl.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Sitka, Alaska. (*Rothrock.*)

192. **P. variabile**, (PERS.) NYL.

Port Clarence, Alaska. (*Rothrock.*)

193. **P. vitellinum**, (EHRH.) NAEG. & HEPP.

On dead wood and rocks.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Greenland. (*Arct. Man.*) At Fort Franklin, Arctic America. (*Richardson.*) North Bluff, Hudson Strait. (*Dr. R. Bell.*) On rocks, Ste. Anne des Monts River, Gaspé Co., Que., Aug. 19th, 1882; on old rails, in great profusion, Brighton, Ont., common on old rails and boulders around Ottawa, Ont.; and on boulders at Aylmer, Que., 1900. (*Macoun.*) Behring Strait. (*Wright.*) Port Clarence, Alaska. (*Rothrock.*)

Var. **aurellum**, ACH.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On rocks, Canada. (*A. T. Drummond.*) On rocks, Ste. Anne des Monts River, Gaspé Co., Que., Aug. 19th, 1882; on boulders around Ottawa, Ont., not rare. (*Macoun.*)

Var. **octosporum**, NYL.

On earth, north shore of Hudson Strait, Aug., 1897. (*Dr. R. Bell.*) On rocks near Hogsback, Ottawa, Ont., May 2nd, 1895, and on bark of cedar rails near Ottawa, Ont., April 14th, 1897. (*Macoun.*)

24. **LECANORA**, Ach.194. **L. lentigera**, (WEB.) ACH.

On earth along the Elbow River, below the Fisher branch, Rocky Mountains, July 12th, 1897; on earth at Morley, Bow River Pass, Rocky Mountains, June, 1885. (*Macoun.*)

195. **L. gelida**, (LINN.) ACH.

On rocks, Greenland. (*Vahl.*) On boulders near Stewart's Lake, northern British Columbia, June, 1875. (*Macoun.*) Cher-

nofski Island, Unalaska and Belkofski, Aliaska Peninsula.
(*Rothrock*.)

196. **L. rubina**, (VILL.) ACH.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) Greenland. (*Arct. Man.*) On rocks, Arctic America. (*Richardson*.) Shores of Lake Superior. (*Agassiz*.) On rocks above Michipicoten, Lake Superior; on rocks, Lake Nipigon, Ont.; on boulders along the Milk River, Alberta; on boulders along Jumping Pound Creek, and on Moose Mountain, Rocky Mountains, 1897; Bow River Pass, Rocky Mountains; Deer Park, Lower Arrow Lake, Columbia River; on rocks by the sea at Hastings, Burrard Inlet, B.C.; by the sea at Craigflower, near Victoria, and on great boulders between tides at Comox, Vancouver Island. (*Macoun*.) On rocks, Middleton Island, Alaska. (*J. M. Macoun*.)

Var. **opaca**, ACH.

Greenland. (*Arct. Man.*) On sandstone rocks, "elbow" of South Saskatchewan, Assa., July 12th, 1879, and on rocks, Wood Mountain, Assa., June 12th, 1895. (*Macoun*.)

197. **L. muralis**, (SCHREB.) SCHÆR. var. **saxicola**, SCHÆR.

Greenland. (*Arct. Man.*) On rocks, Grand Lake, in the Bay of Islands, and on wood at Chimney Cove, Newfoundland. (*Waghorne*.) On rocks, Ste. Anne des Monts River, Gaspé Co., Que., Aug. 18th, 1882; quite common on boulders around Ottawa, Ont., and at Chelsea and King's Mountain, Que. (*Macoun*.) Cliffs on St. Matthew Island, St. Paul Island, Sitka, Unalaska and elsewhere in Alaska. (*Rothrock*.)

A specimen collected June 7th, 1897, on St. George Island, Behring Sea, by Mr. J. M. Macoun is referred here, but is more likely a new species, as suggested by Branth.

Var. **Garovaglii**, ANZ.

On rocks, Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.)

Var. **versicolor**, FR.

On rocks, Leading Tickles, Newfoundland. (*Waghorne*.)

198. *L. pallida*, (SCHREB.) SCHÆR.

On trunks of trees and fence-rails, not uncommon.

Arctic America. (*Richardson.*) Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) On trunks of trees, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On bark of trees at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; on bark of trees at Truro, N.S.; on basswood bark, Dow's Swamp and other places around Ottawa, Ont.; on young pine trees at Carleton Place, Carleton Co., Ont.; on bark of trees, Central Ontario Junction, Hastings Co., Ont.; on tree-trunks around Niagara Falls, Ont., May 14th, 1901; on bark of maple trees, Algonquin Park, Ont., July, 1900; on bark of trees, Nipigon River and Lake, Ont.; on bark of *Alnus rubra*, Hastings, Burrard Inlet, B.C. (*Macoun.*)

Var. *canceriformis*, TUCKERM.

On large trunks in woods, McKay's Bush, Ottawa, Ont.; on trunks of beech trees at Belleville, Hastings Co., Ont. (*Macoun.*)

199. *L. sordida*, (PERS.) TH. FR.

Greenland. (*Arct. Man.*) On rocks, Arctic America. (*Richardson.*) Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) Summit of Mount Albert, Gaspé Co., Que., August 26th, 1882; on rocks, Wood Mountain, Assa., June 12th, 1895. (*Macoun.*) South Fowl Lake, boundary between Minnesota and Ontario, 1897. (*Fitch.*)

200. *L. frustulosa*, (DICKS.) MASS.

On rocks, Greenland. (*Vahl.*)

201. *L. subfusca*, (LINN.) ACH. var. *allophana*, ACH.

Greenland. (*Arct. Man.*) Labrador and Newfoundland. (*Waghorne* fide *Eckfeldt.*) On trees, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On beech trees at Edmonton, Ont. (*James White.*) On aspen poplar, Greenwood Township, Man. (*Thos. Walker.*) On old fence boards and logs, Sable Island, N. S., July, 1899; common on trunks and old logs at Baddeck, Grand Narrows and Margaree, Cape Breton Island, N.S., July, 1898; on bark of trees at Truro, N.S.; on drift wood by the sea, Jupiter River,

Anticosti, Que.; very abundant on large trunks of beech, maple and basswood, and on old rails at Ottawa, Ont.; on small trees at Aylmer, Que.; abundant at Belleville, Hastings Co., Ont.; common on trunks, Algonquin Park, Ont., June, 1900; on bark of trees, Nipigon River, Ont.; on trees along Lake Winnipegosis, Man.; on sandstone rocks, Wood Mountain, Assa., June 10th, 1895; on bark of poplar, Jumping Pound Creek, Rocky Mountains; on trees along the Columbia River at Revelstoke, B.C.; on alders along the Nechaco River, B.C.; on the old wharf at Comox, Vancouver Island. (*Macoun.*) Cook's Inlet, Unalaska, and Port Clarence, Alaska. (*Rothrock.*)

Var. *hypnorum*, SCHÆR.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) Along the Mackenzie River and around Great Bear Lake. (*Richardson.*) On earth and moss at Banff, Rocky Mountains, July 11th, 1891; on earth, Jumping Pound Creek, at the bridge, and along Bragg's Creek, foothills of Rocky Mountains. (*Macoun.*) Port Clarence and Cape Lisburne, Alaska. (*Rothrock.*)

Var. *argentata*, ACH.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) On maple bark at Cove Head, Prince Edward Island; on trees at the base of King's Mountain, near Chelsea, Que., May, 1897; on bark of young poplar trees, Nipigon River, Ont.; on young trees, Sea's farm, near Victoria, Vancouver Island. (*Macoun.*)

Var. *coilocarpa*, ACH.

On ash trees at Baddeck, Cape Breton Island, N.S., July, 1898; on beech bark in woods around Ottawa, Ont.; on bark of *Alnus incana* at Jumping Pound Creek, Rocky Mountains; on poplar bark, Sea's farm, near Victoria, Vancouver Island, May 22nd, 1893. (*Macoun.*)

Var. *atrynea*, ACH.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) On fences near the sea, Sable Island, N.S., July, 1899; on ash bark, Gaspé coast, August, 1882; on old logs by the sea, Oak Bay, near Victoria, Vancouver Island, June, 1887. (*Macoun.*) On logs by the sea, Hanson Island, Gulf of Georgia, B.C., 1885. (*Dr. G. M. Dawson.*)

Var. *distans*, Ach.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) On bark of beech trees, McKay's woods, Ottawa, Ont., April 16th, 1891. (*Macoun*.)

Var. *minor*, Branth.

On limestone rocks, near the Hogsback, near Ottawa, Ont., May 7th, 1897. (*Macoun*.)

202. *L. Hageni*, Ach.

On rocks, dead wood and trees.

Greenland. (*Vahl*.) Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) On wood at Ottawa and London, Ont. (*A. T. Drummond*.) On fence boards, Main Station, Sable Island, N.S., July, 1899; on old logs, Madeline River, Gaspé Co., Que.; on old fence-rails and cedar bark at Ottawa, Ont.; on fence-rails and bark at Belleville, Hastings Co., Ont.; on old logs along Jumping Pound Creek, foothills of Rocky Mountains. (*Macoun*.) Chilliwack Valley, B.C. (*J. M. Macoun*.) Cape Lisburne, Alaska. (*Rothrock*.)

203. *L. albescens*, (Hoffm.) Fr. Th.

On logs, Chimney Cove, Newfoundland. (*Waghorne*.)

204. *L. atra*, (Huds.) Ach.

On rocks and tree trunks,

Greenland. (*Arct. Man*.) Arctic America. (*Richardson*.) Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) On trees, old rails and rocks at Ottawa, Ont.; on old rails at Brighton, Ont., 1893; on rocks along Jumping Pound Creek, foothills of Rocky Mountains; on poplar trunks, Sea's farm, near Victoria, Vancouver Island, May 22nd, 1893; on the old wharf at Comox, Vancouver Island, June 23rd, 1893. (*Macoun*.) Cape Lisburne, Alaska. (*Rothrock*.)

205. *L. atriseda*, Nyl.

On rocks, Rope Cove, Bay of Islands, Newfoundland. (*Waghorne*.)

206. *L. badia*, (PERS.) ACH.

On sub-alpine rocks.

Greenland. (*Arct. Man.*) Battle Harbor, Labrador. (*Waghorne.*)
Arctic America. (*Richardson.*) Tadousac, Quebec. (*A. T. Drummond.*)

207. *L. dispersa*, (PERS.) NYL.

On rocks, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

208. *L. thiodes*, (ARNOLD.) TIROL. xxx, p. 369.

On rocks, Grand Lake, Bay of Islands, Newfoundland. (*Waghorne.*)

209. *L. bicincta*, (RAM.) NYL.

On rocks, Black Islands, Newfoundland. (*Waghorne.*)

210. *L. ochraceo-rubescens*, ARNOLD.

On sandstone rocks, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

211. *L. Pacifica*, TUCKERM.

On trees on many parts of Vancouver Island.

On poplar trees and alder at Victoria and Comox, Vancouver Island; on small trees at Hastings, Burrard Inlet, B.C. (*Macoun.*)
On bark, Alert Bay, Vancouver Island. (*Dr. G. M. Dawson.*)

212. *L. atrosulphurea*, (WAHL.) ACH.

On rocks. Arctic America. Greenland. (*Vahl.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

213. *L. varia*, (EHRH.) NYL.

Common on trees, dead wood and stones.

Greenland. (*Arct. Man.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On dead pine, Rigaud Mountain, Vandreuil Co., Que. (*Rev. G. Ducharme.*) On old rails, Main Station, Sable Island, N.S., July, 1899; on old rails, Margaree, Cape Breton Island, N.S., July, 1898; on old rails, bark of trees and boulders at Ottawa,

Ont.; on old fence-rails at Belleville, Hastings Co., Ont.; on old rails near Wooler, Northumberland Co., Ont., 1893; on *Alnus incana* along Jumping Pound Creek, foothills of Rocky Mountains; on young poplars, Sea's farm, Victoria, and on oak trees at Comox, Vancouver Island. (*Macoun.*)

Var. **polytropa**, NYL.

Alpine and sub-alpine rocks.

Arctic America. (*Richardson.*) Middle Greenland. (*Eberlin.*) On rocks, Labrador and Newfoundland. (*Waghorne.*) On limestone rocks at Aylmer, Que., April 25th, 1900. (*Macoun.*)

Var. **intricata**, NYL.

Alpine and sub-alpine rocks.

Greenland. (*Arct. Man.*) Arctic America. (*Richardson.*) On rocks, Chimney Cove, Newfoundland. (*Waghorne.*)

Var. **symmicta**, ACH.

On trees and dead wood.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) On old fence-rails, Main Station, Sable Island, N.S., July, 1899; on old rails at Margaree and Grand Narrows, Cape Breton Island, N.S., July, 1898; on bark and dead wood by the beach, Gaspé Basin, Gaspé Co., Que.; on old rails and bark of living trees at Ottawa, Ont.; on trees, Nipigon, Lake Superior; on the old wharf at Comox, Vancouver Island. (*Macoun.*)

Var. **sæpincola**, FR.

On dead wood; common.

Abundant on old cedar rails and boards around Ottawa, Ont.; at Belleville, Hastings Co., Ont.; on the old wharf at Comox, Vancouver Island, June, 1893. (*Macoun.*)

214 **L. symmictera**, NYL.

Goose Arm, Newfoundland. (*Waghorne.*)

215. **L. athroocarpa**. (DUB.) NYL.

Trees, rocks and shrubs.

On rocks, Coal Point, Newfoundland. (*Waghorne.*) British North America. (*Richardson.*) On beech and maple trees at

Belleville, Hastings Co., Ont.; on poplar bark at Nipigon, Lake Superior; on poplar bark, Fort Chipweyan, Lake Athabasca. (*Macoun.*)

216. *L. castanea*, (HEPP.) TH. FR.

Growing over mosses in alpine districts.
Greenland. (*Vahl.*)

217. *L. ventosa*, (LINN.) ACH.

Alpine rocks, Arctic America. (*Richardson.*) Greenland. (*Vahl.*) On rocks, Fort Chimo, Ungava Bay, Labrador, Aug. 1896. (*A. P. Low.*) Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) Summit of Mount Albert, Gaspé Co., Que.; on rocks by the sea at Nanaimo, Vancouver Island. (*Macoun.*) On rocks, St. George Island, Behring Sea. (*J. M. Macoun.*) Islands of Behring Strait. (*Wright.*)

218. *L. elatina*, ACH.

Dead bark and dead wood of coniferous trees.
Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) Canada. (*A. T. Drummond.*) On spruce bark in woods at Baddeck, Cape Breton Island, N.S., July, 1898; on bark of balsam fir, Brackley Point, Prince Edward Island, 1888; on spruce bark, Ste. Anne des Monts River, Gaspé Co., Que.; abundant on hemlock bark, Algonquin Park, Ont., June, 1900; on Menzies' spruce at Comox, Vancouver Island. (*Macoun.*)

Var. *ochrophæa*, TUCKERM.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) On old logs, Canaan Forks, N.B., 1892. (*J. Moser.*) On cedar bark, Tobique River, N.B., 1884. (*Geo. U. Hay.*) On bark of trees, Ste. Anne des Monts, Gaspé Co., Que., Aug., 1882; on cedar bark, Algonquin Park, Ont., June, 1900; on bark of Douglas fir, Comox, Vancouver Island, May, 1887. (*Macoun.*) Sheep Creek, near Juneau, Alaska. (*Miss G. Cooley.*)

Var. *minor*, TUCKERM.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*)

219. **L. pallescens**, (LINN.) SCHÆR.

On dead wood, bark of trees and moss; common.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Greenland. (*Arct. Man.*) Arctic America. (*Richardson.*) On moss, summit of Mount Albert, Gaspé Co., Que.; on trees at Ottawa, Ont.; at Belleville, Hastings Co., Ont.; on trunks, rare, Algonquin Park, Ont. June, 1900; on earth and moss, Jumping Pound Creek and Bragg's Creek, foothills of Rocky Mountains; on moss and bark at Deer Park, Lower Arrow Lake, Columbia River, B.C.; on moss, mountains south of Spence's Bridge, B.C.; on alder bark and rocks, Hastings, B.C.; on rocks, Parson's Mountain, Victoria, and Mount Benson, Nanaimo, and on bark at Comox, Vancouver Island. (*Macoun.*) On bark of beech trees at Edmonton, Ont. (*James White.*) On trees, Thurlow Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*) Chugachick, Cook's Inlet, Alaska. (*Rothrock.*) Sheep Creek, near Juneau, Alaska. (*Miss G. Cooley.*)

Var. **Upsalensis**, (LINN.)

Greenland. (*Arct. Man.*) On earth at Wood Mountain, Assa.; on earth and moss at Bragg's Creek and Jumping Pound Creek, Rocky Mountains; on earth on rocks, Parson's Mountain and Pier's farm, Victoria, Vancouver Island. (*Macoun.*) Kotzebue Sound, Alaska. (*Turner.*)

Var. **rosella**, TUCK.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On bark of trees, Thurlow Island, Gulf of Georgia, B.C., July 25th, 1885. (*Dr. G. M. Dawson.*) On Douglas fir at Comox, Vancouver Island, April 30th, 1887. (*Macoun.*) Sheep Creek, Juneau, Alaska. (*Miss G. Cooley.*)

220. **L. tartarea**, (LINN.) ACH.

Upon rocks, earth and mosses.

West Greenland. (*Warming.*) On rocks, Baffin Land, Hudson Strait, Aug., 1897. (*Dr. R. Bell.*) Various forms on Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On earth, Barren Grounds, Lat. 61°, Long. 104° W. (*J. W. Tyrrell.*) Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On earth, Salt

Lake, Anticosti, Que.; on rocks, Sea's farm, Victoria, Vancouver Island. (*Macoun.*) St. George and St. Paul islands, Behring Sea. (*J. M. Macoun.*) Shumigan Group, Unalaska and Cape Lisburne, Alaska. (*Rothrock.*)

The form named *L. leprosa* by Nylander was found on earth on Sable Island, N.S., July, 1899. (*Macoun.*)

Var. **frigida**, (Sw.)

Greenland. (*Arct. Man.*) On rocks, St. Paul Island, Behring Sea, June 19th, 1897. (*J. M. Macoun.*) Kotzebue Sound, Alaska. (*Turner.*)

221. **L. oculata**, (DICKS.) ACH.

Incrusting mosses and other substances in alpine districts.

Greenland. (*Vahl.*) On rocks in the Barren Grounds, Lat. 61°, Long. 104° W., July, 1893. (*J. B. Tyrrell.*) Islands of Behring Strait. (*Wright.*) On rocks, St. Paul Island, Behring Sea, June 19th, 1897. (*J. M. Macoun.*)

222. **L. melanaspis**, (VAHL.) ACH.

On rocks, Greenland. (*Vahl.*)

223. **L. verrucosa**, (ACH.) LAUR.

Upon mosses and earth in alpine districts.

Greenland. (*Vahl.*) On dead stems of *Selaginella rupestris*, along Jumping Pound Creek, Rocky Mountains, June 15th, 1897. (*Macoun.*) Eschscholtz Bay, Arctic Ocean, Alaska. (*Rothrock.*)

224. **L. cenisia**, ACH.

On rocks, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On limestone rocks, Hogsback, Rideau River, near Ottawa, Ont., May 2nd, 1897. (*Macoun.*)

225. **L. cinerea**, (LINN.) SOMMERF.

On rocks, Arctic America. (*Richardson.*) Greenland. (*Arct. Man.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Canada. (*A. T. Drummond.*) On limestone rocks along the Rideau River, south of Ottawa, Ont., May 2nd, 1897; on rocks, Lake Nipigon, Ont., 1884. (*Macoun.*) Port Clarence, Icy Cape, and Cape Lisburne, Alaska. (*Rothrock.*)

Var. *laevata*, FR

On rocks, Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.)

226. *L. gibbosa*, NYL.

Chimney Cove, Labrador. (*Waghorne*.) On rails, Canada. (*A. T. Drummond*.) On old cedar rails, Mr. James Terrill's farm, near Wooler, Northumberland Co., Ont., Oct. 16th, 1898; on flat limestone rocks, Blueberry Point, Aylmer, Que., April 25th, 1900. (*Macoun*.) Alaska. (*Rothrock*.)

227. *L. calcarea*, (LINN.) SOMMERF.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) Greenland. (*Arct. Man.*) On limestone rocks, Rideau River, Ottawa, Ont., May 2nd, 1897; on rocks, Deer Park, Columbia River, B.C., June 7th, 1890. (*Macoun*.)

Var. *contorta*, FR.

On calcareous rocks, Greenland. (*Vahl*.)

228. *L. cinereo-rufescens*, NYL.

On rocks, Chimney Cove, also the form *Lecanora sanguinea* Kplh, on stones at Birchy Cove, Newfoundland. (*Waghorne*.)

229. *L. caesio-cinerea*, (NYL.) ECKFELDT.

On rocks, Chimney Cove, Newfoundland. (*Waghorne*.)

230. *L. lacustris*, (WITH.) NYL.

On rocks often inundated.

Greenland. (*Vahl*.) On rocks, Grand Lake, Newfoundland. (*Waghorne*.)

231. *L. epulotica*, (ACH.) LEIGHT.

On rocks, Newfoundland. (*Waghorne*.)

Var. *subepulotica*, NYL.

On granitic rocks, Canada. (*A. T. Drummond*.)

232. **L. molybdina**, (WAHL.) ACH. var. **vulgaris**, SCHÆR.

On maritime rocks, Greenland. (*Vahl.*) Elsewhere in Arctic America. (*Dr. Kane.*) On rocks at Tadousac, Que. (*A. T. Drummond.*)

Var. **ereutica**, WAHL.

On rocks at Tadousac, St. Lawrence River, Que. (*A. T. Drummond.*)

233. **L. chlorophana**, (WAHL.) ACH.

Alpine rocks, and at lower elevations.

Greenland. (*Vahl.*) On boulders in southern Assiniboia, not uncommon, June, 1895. (*Macoun.*)

234. **L. xanthophana**, (NYL.)

On rocks at Rivière du Loup, Que. (*C. G. Pringle.*)

235. **L. Schleicheri**, (ACH.) NYL.

Not uncommon on earth at the forks of Old Wives' Creek, Assa., June 2nd, 1895. (*Macoun.*)

236. **L. laxa**, BRANTH. (MS.)

On limestone rocks along the Rideau River near Hogsback, near Ottawa, Ont., April 30th, 1897. (*Macoun.*)

237. **L. cervina**, (PERS.) NYL.

On rocks near the Milk River, southern Assiniboia, June, 1895. (*Macoun.*) Eschscholtz Bay, Alaska. (*Rothrock.*)

238. **L. glaucocarpa**, (WAHL.) ACH.

On calcareous rocks.

Arctic America. (*Richardson.*) On rocks, Meadows, Goose Arm, Newfoundland. (*Waghorne.*)

239. **L. fuscata**, (SCHRAD.) TH. FR.

On granitic rocks. Arctic America. (*Richardson.*) Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) On limestone
8½

rocks, Rideau River, south of Ottawa, Ont., May 2nd, 1897. (*Macoun.*)

Var. **rufescens**, TH. FR.

On granitic rocks. Arctic America. (*Richardson.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

240. **L. privigna**, (ACH.) NYL.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On granitic rocks, Tadousac, Que. (*A. T. Drummond.*) On rocks, Ste. Anne des Monts River, Gaspé Co., Que. (*Macoun.*)

Var. **pruinosa**, AUCT.

On limestone rocks along the St. Lawrence, at Quebec. (*A. T. Drummond.*) On limestone rocks along Jupiter River, Anticosti, Que.; on limestone rocks around Ottawa, Ont., common. (*Macoun.*)

241. **L. platycarpoides**, (ANZI.)

On sandstone rocks along Jumping Pound Creek, Rocky Mountain, Alta., June 15th, 1897. (*Macoun.*)

242. **L. flavada**, HEPP.

On stones, Coal River, Newfoundland. (*Waghorne.*)

243. **L. effusa**, PERS.

On wood, River Head, Chimney Cove, McIver's Cove, and Benoit's Cove, Newfoundland. (*Waghorne.*)

244. **L. pinniperda**, (KÆRB.)

On an old plank at Crabbs, Newfoundland. (*Waghorne.*)

245. **L. detractula**, (NYL.)

On stones in Lark Harbour, Newfoundland. (*Waghorne.*)

25. **RINODINA**, MASS.

246. **R. nimbose**, (FR.) TH. FR.

Naked earth in alpine or northern districts. Greenland. (*Vahl.*)

247. **R. oreina**, (ACH.) MASS.

Greenland. (*Arct. Man.*) On rocks at the "elbow" of the South Saskatchewan, Assa., July 13th, 1879; also on Laurentian rocks at Shannonville, Hastings Co., Ont.; abundant on boulders on the prairie throughout Assiniboia, June, 1895. (*Macoun.*)

248. **R. Ascociscana**, TUCKERM.

On trunks, Quebec. (*A. T. Drummond.*) On beech trees at Belleville, Hastings Co., Ont., April 20th, 1879; on beech trees at Ottawa, Ont., April 29th, 1891; also in woods at Billings Bridge, near Ottawa, April, 1897. (*Macoun.*)

249. **R. turfacea**, (WAHL.) NYL.

On the earth and running over mosses in alpine and northern districts.

Greenland. (*Vahl.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On earth, north shore of Lake Superior; on earth in woods at Banff, on Moose Mountain and at Morley, Rocky Mountains; in Roger's Pass, Selkirk Mountains, B.C. (*Macoun.*) Islands of Behring Strait. (*Wright.*)

Var. **nniaraea**, NYL.

Greenland. (*Arct. Man.*) Along Bragg's, Creek foothills of Rocky Mountains; on earth at Hector in the Rocky Mountains; northern British Columbia. (*Macoun.*) On islands in Behring Strait. (*Wright.*)

250. **R. succedens**, NYL.

Wild Cove, M'Iver's Cove, Frenchman Cove, Middle Arm and Chimney Cove, Newfoundland. (*Waghorne.*)

251. **R. teichophila**, NYL.

On rocks, Chimney Cove, Little Harbour, Newfoundland. (*Waghorne.*)

252. **R. sophodes**, (ACH.) NYL.

Common on bark.

Greenland. (*Arct. Man.*) On bark of trees, John's Beach, Deer Lake, and on rocks, Chimney Cove, Newfoundland. (*Waghorne.*)

Quite common on bark of young red maples in the vicinity of Ottawa, Ont.; on maple trees at Belleville, Hastings Co., Ont.; on bark, Parson's Mountain, near Victoria, Vancouver Island. (Doubtful.) (*Macoun.*)

Var. **atrocinerea**, NYL.

On rocks at Shannonville, Hastings Co., Ont., Oct., 1882. (*Macoun.*)

Var. **confragosa**, NYL.

On maple trees at Belleville, Hastings Co., Ont.; on young poplars, Sea's farm, near Victoria, Vancouver Island, May 22nd, 1893. (*Macoun.*)

Var. **exigua**, FR.

Greenland. (*Arct. Man.*) On limestone rocks in Rockcliffe Park, and at the Hogsback, 4 miles from Ottawa, Ont., April, 1897; on old fence-rails at Brighton, Northumberland Co., Ont.; on bark, North Bay, Lake Nipissing; on poplar bark, Lake Nipigon, Ont.; on green ash bark at Old Wives' Creek, Assa., June, 1895; on poplar bark, Jumping Pound Creek, Rocky Mountains, June, 1897; on bushes in woods at Comox, Vancouver Island, June 23rd, 1893. (*Macoun.*)

253. **R. constans**, (NYL.) TUCKERM.

On living and dead wood.

On bark of living beech at Ottawa, Ont.; on old logs at Hastings, Burrard Inlet, B.C. (*Macoun.*)

26. **PERTUSARIA**, DC.

254. **P. bryontha**, (ACH.) NYL.

On earth, growing over mosses, in alpine and northern districts.

Greenland. (*Vahl.*) Growing over mosses, L'Anses au Mort, Labrador. (*Waghorne.*) Shores of St. Mary's River, Lake Superior. (*Richardson.*) Islands of Behring Strait. (*Wright.*)

255. *P. velata*, (TURN.) NYL.

On trees, rails and rocks.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On trunks at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; quite common on trunks and rails in many localities around Ottawa, Ont.; on bark of trees at Belleville, Hastings Co., Ont.; on fence-rails, Central Ontario Junction, Hastings Co.; at Brighton, Northumberland Co., Ont.; on trunks, Queenston Heights, Ont., May 9th, 1901. (*Macoun.*) On bark, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On beech trunks at Edmonton, Ont. (*James White.*)

256. *P. panyrga*, (ACH.) TH. FR.

On the earth running over mosses in alpine and northern districts.

Greenland. (*Vahl.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On moss on rocks, St. Paul Island, Behring Sea, July, 1897. (*J. M. Macoun.*)

257. *P. multipuncta*, (TURN.) NYL.

On trees or more rarely on rocks.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Quite common on trunks, chiefly birch, at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; on trees at Truro, N.S.; on spruce trees, Anticosti, Que.; on ash trees, Ste. Anne des Monts River, Gaspé Co., Que.; on maple, cedar and other trees, common at Ottawa, Ont.; on trees at Belleville, Hastings Co., Ont.; on trees, Algonquin Park, Ont., June, 1900; at Sudbury Junction, Ont.; on poplar trees along Jumping Pound Creek, Rocky Mountains, June, 1897; on poplar trees, Deer Park, Lower Arrow Lake, Columbia River, B.C.; on bark of oak trees at Victoria, Vancouver Island. (*Macoun.*) On poplar trunks at Edmonton, Ont. (*James White.*)

258. *P. dactylina*, (ACH.) NYL.

On earth running over mosses in alpine and northern districts.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On mountain summits at Hector, Rocky Mountains. (*Macoun.*) On Unalaska and St. Paul islands, Behring Sea. (*J. M. Macoun.*) Islands of Behring Strait. (*Wright.*)

259. *P. ambiguus*, (NYL.) TUCKERM.

On trees at Comox, Vancouver Island, May 2nd, 1887. (*Macoun.*) On bark of Douglas fir, Pearce Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*)

260. *P. rhodocarpa*, KOERB.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On bark, Arctic America. (*Nylander.*) On trees, northern British Columbia, June, 1875. (*Macoun.*)

261. *P. communis*, DC.

On trunks and rocks.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On trunks at Baddeck and Margaree, Cape Breton Island, N.S.; on trees, Madeline River, Gaspé Co., Que.; on trees and rocks in woods at Ottawa, Ont.; and on trunks, Aylmer, Que.; on beech trunks at Belleville, Hastings Co., Ont.; on trunks, Jordan station, Lincoln Co., Ont., May 17th, 1901; on trees, Canfield Junction, Haldimand Co., Ont.; on maple bark, Algonquin Park, Ont., July, 1900; on trees, falls of Nipigon River, Ont. (*Macoun.*) On bark, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*)

262. *P. leioplaca*, (ACH.) SCHÆR.

On trees and rocks.

On bark of trees at River Head, Sparrville Cove, and Middle Arm, Newfoundland. (*Waghorne.*) Canada. (*Richardson.*) On trees, Ste. Anne des Monts River, Gaspé Co., Que.; on trees at Amqui station, Intercolonial Railway, Que.; on trunks in woods, at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; on beech trees in woods at Buckingham, Que., 1896. (*Macoun.*)

The above includes *P. lævigata*, Nyl., which has not been separated by us.

263. *P. pustulata*, (ACH.) NYL.

On bark of trees and dead wood.

Coast of Gaspé, Que.; on old cedar rails north of Aylmer, Que., May, 1897; on bark of trees at Belleville, Hastings Co., Ont.; on alder trees at Revelstoke, B.C. (*Macoun.*)

264. **P. glomerata**, (ACH.) SCHÆR.

On earth, running over mosses in alpine and northern districts.

On earth in Baffin Land, Hudson Strait, Aug., 1897. (*Dr. R. Bell.*) On earth near Forteau, Labrador. (*Waghorne.*) Running over mosses on islands in Lake Nipigon, July 12th, 1884. (*Macoun.*) Islands of Behring Strait. (*Wright.*) Port Mulgrave, Alaska. (*Rothrock.*)

265. **P. globularis**, ACH.

On rocks amongst mosses.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

266. **P. Wulfenii**, DC.

On trunks, Que. (*A. T. Drummond.*) On beech trees at Ottawa, Ont., April 21st, 1891; also at Billings Bridge, Ont., and Hull, Que. These specimens are placed here on authority but in the opinion of the writer are doubtful. (*Macoun.*)

267. **P. (Variolaria) Waghornei**, HULTING.

On bark of trees in company with *Pertusaria lævigata* at Whitmore, Newfoundland. (*Waghorne.*)

268. **P. (Variolaria) lactea**, WULF.

On stones at Shoal Point, Newfoundland. (*Waghorne.*) The last two species are very likely included in the sorediferous forms of *Pertusaria multipuncta* and *communis*.

27. **CONOTREMA**, Tuckerm.269. **C. urceolatum**, (ACH.) TUCKERM.

On maple trunks, Hunter's River, Prince Edward Island; on trunks at Baddeck and Magaree, Cape Breton Island, N.S., July, 1898; on bark of trees at Ottawa, Ont.; on maple bark at Belleville and Central Ontario Junction, Hastings Co., Ont.; on poplar trees at Brighton, Ont.; on *Carya amara* in woods west of Hull, Que.; on maple trees, Otter Slide Creek, Algonquin Park, Ont., July, 1900. (*Macoun.*)

28. **GYALECTA, (Ach.) Anzi.**270. **G. lutea, (Dicks.) TUCKERM.**

On bark of trees.

On hemlock bark at Beechwood, Ottawa, Ont.; on spruce bark along the Red Deer River, Porcupine Mountains, Man. (*Macoun.*)

271. **G. Pineti, (SCHRAD.) TUCKERM.**

On bark and rotten wood at the base of trees.

On dead wood in woods, Sudbury Junction, Ont., May 29th, 1884. (*Macoun.*)

272. **G. rhexoblephara, (NYL.) TUCKERM.**

On earth, growing over mosses, &c.

Greenland. (*Vahl.*) Islands of Behring Strait. (*Wright.*)

29. **URCEOLARIA, Tuckerm.**273. **U. scruposa, (LINN.) NYL.**

On rocks and on earth and often growing over mosses.

On earth, Labrador or Newfoundland with var. *bryophila*, Eschw. (*Waghorne* fide *Eckfeldt.*) Arctic America. (*Richardson.*) On rocks, Lake Nipigon, Ont.; on the prairie north of Cypress Hills, Assa.; common on earth along Old Wives' Creek and south of Wood Mountain, Assa.; on earth and roots along Jumping Pound Creek, Rocky Mountains, June, 1897; on earth at Revelstoke and Deer Park, Columbia River, B.C.; on earth in Roger's Pass, Selkirk Mountains, B.C. (*Macoun.*) Alaska. (*Rothrock.*)

30. **THELOTREMA, (Ach.) Eschw.**274. **T. lepadinum, (ACH.)**

On bark of trees and dead wood.

On bark of trees, Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) Arctic America. (*Richardson.*) On ash trees at Ottawa, Ont.; on Douglas fir, Victoria, Vancouver Island and on *Alnus rubra* at Comox, and Alberni, Vancouver Island. (*Macoun.*)

275. **T. subtile**, (TUCKERMAN.) ECKFELDT.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

31. **STEREOCAULON**, Schreb.276. **S. coralloides**, FR.

Greenland. (*Arct. Man.*) On rocks, Arctic America. (*Herb. Hooker.*) At Nain, Labrador, and on Digge's Island, Hudson Strait, 1884. (*Dr. R. Bell.*) On rocks near Whale River and at Clearwater Lake, Labrador, 1898. (*A. P. Low.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Barren Grounds, Lat. 61°, Long. 104°, July 24th, 1893. (*J. B. Tyrrell.*) On rocks, Tadousac, Que. (*A. T. Drummond.*) On Mount Aylmer, Devil's Lake, Rocky Mountains, alt. 8,000 feet; common on rocks at Victoria, Vancouver Island. (*Macoun.*) Unalaska Island, Behring Sea. (*J. M. Macoun.*)

277. **S. paschale**, (LINN.) FR.

On earth and stones quite common.

Greenland. (*Arct. Man.*) Arctic America. (*Herb. Hooker.*) On rocks, Baffin Land, Hudson Strait, 1897. (*Dr. R. Bell.*) Indian Harbour and Eagle River, Labrador. (*Waghorne.*) On rocks, Tadousac, Que. (*A. T. Drummond.*) Rocky islands, Stony Lake, Peterborough Co., Ont. (*Thos. Walker.*) On rocks, Savanne, west of Lake Superior. (*W. McInnes.*) On boulders in woods at Margaree, Cape Breton Island, N.S., July, 1898; on earth, Tobique River, N.B.; along the Ste. Anne des Monts River, Gaspé Co., Que.; rather frequent on boulders around Ottawa, Ont.; on boulders, Algonquin Park, Ont., July, 1900; quite common on rocks, Thunder Bay, Lake Superior; on rocks and earth, Hastings, Burrard Inlet, B.C.; on Mount Benson near Nanaimo, Vancouver Island. (*Macoun.*) On rocks, Thurlow Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*) On rocks, Kingston Mills, Ont., Sept. 23rd, 1901; on St. George and St. Paul islands, Behring Sea, and Kadiak Island, Alaska. (*J. M. Macoun.*) Kotzebue Sound, Alaska. (*Turner.*) Common everywhere in Alaska. (*Rothrock.*)

278. **S. tomentosum**, (FR.) TH. FR.

On earth and stones.

Greenland. (*Arct. Man.*) Arctic America. (*Richardson.*) Indian Harbour, Labrador; Birchy Cove, Clark's Brook, Bay of Islands,

Newfoundland. (*Waghorne*.) On stones at Lancaster, and on earth along the Tobique River, N.B. (*G. U. Hay*.) On rocks, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme*.) On boulders at Baddeck, Cape Breton Island, N.S., July, 1898; on stones at Truro, N.S.; on stones along Jupiter River, Anticosti, Que.; on rocks, Cape Rosier, Gaspé Co., Que.; on stones at Ottawa, Ont.; on rocks, Lake Superior and on earth at Lake Nipigon; on rocks in woods at Banff, Jumping Pound Creek, Bragg's Creek and Castle Mountain, Rocky Mountains; on rocks near McLeod's Lake, B.C.; on rocks at Hot Springs, Kootenay Lake, B.C.; on rocks, Salt Spring Island, Gulf of Georgia; on rocks at Victoria, Vancouver Island. (*Macoun*.) Rocky Mountains. (*Bourgeau*.) Mountains east of Adam's Lake, B.C. (*Dr. G. M. Dawson*.) Chilliwick Valley, B.C., 1901. (*J. M. Macoun*.) Alaska. (*Dr. Kellogg*.) Sheep Creek, near Juneau; Davidson Glacier, Alaska, (*Miss G. Cooley*.)

Var. **alpinum**, TH. FR.

Greenland. (*Vahl*.) Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) Arctic America. (*Richardson*.) Islands of Cumberland Gulf. (*Howgate*.) Islands of Behring Strait. (*Wright*.)

279. **S. denudatum**, (FLOERK.)

On rocks, Greenland. (*Dall*.) North Bluff and Nottingham Island, 1885. (*Dr. R. Bell*.) On rocks, Clearwater River, Labrador, July, 1896. (*A. P. Low*.) Venison Tickle, Eagle River and Indian Harbour, Labrador. (*Waghorne*.) Newfoundland. (*Despreaux*.) Summit of Mount Albert, Gaspé Co., Que. (*Macoun*.) Alaska. (*Dr. Kellogg*.)

280. **S. condensatum**, HOFFM.

On rocks, Clearwater Lake, northern Labrador, July, 1896. (*A. P. Low*.) On rocks, Baffin Land, July, 1897. (*Dr. R. Bell*.) Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.)

281. **S. pileatum**, (ACH.)

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) On stones along Jupiter River, Anticosti, Aug., 1883; on boulders at Baddeck and Margaree, Cape Breton Island, July, 1898. (*Macoun*.)

282. *S. Wrightii*, TUCKERM.

On rocks, islands of Behring Strait. (*Wright.*)

283. *S. nanum*, ACH.

On rocks, Parson's Mountain, near Victoria, Vancouver Island, May 19th, 1893. These specimens are depauperate and quite white.

284. *S. nanodes*, TUCKERM.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

32. *PILOPHORUS*, Th. Fr.285. *P. cereolus*, (ACH.) var. *Fibula*, TUCKERM.

On rocks, bordering water courses. (*Tuckerman.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On rocks at Belleville, Hastings Co., Ont., 1882. (*Macoun.*) Sawmill Creek, Sitka, Alaska. (*Rothrock.*) Alaska. (*Turner.*)

Var. *acicularis*, TUCKERM.

Pacific Coast. (*Menzies.*) Rocky Mountains. (*Herb. Hooker.*) On rocks at Yale, B.C.; on Parson's Mountain near Victoria, Vancouver Island, and on Salt Spring Island, Gulf of Georgia, B.C. (*Macoun.*) On rocks, St. Paul Island, Behring Sea. (*J. M. Macoun.*) Juneau, alt. 3,000 feet; Salmon Creek and Gold Creek Cañon, near Juneau, Alaska. (*Miss G. Cooley.*)

Var. *robustus*, TUCKERM.

Islands of Behring Strait. (*Wright. Turner.*) On Parson's Mountain, Vancouver Island and Salt Spring Island, Gulf of Georgia; specimens with branching and corymbose summit were obtained. (*Macoun.*) On rocks, St. Paul Island, Behring Sea, June 19th, 1897. (*J. M. Macoun.*)

286. *P. clavata*, FRIES. N. SP.

On large boulders, Salt Spring Island, Gulf of Georgia, B.C., May 9th, 1887. This species is easily distinguished by its elongated club-shaped apothecia. When named by Fries no description was given.

33. **CLADONIA**, Hoffm.287. **C. alciornis**, (LIGHTF.) FLÆRKE.

Sterile, sandy earth.

Greenland. (*Arct. Man.*) Arctic America. (*Hooker.*) On earth, Cape Rosier, Gaspé Co., Que.; on the summit of Mount Albert, Gaspé Co., Que.; on earth at Truro, N.S., June 12th, 1883; on limestone rocks at Hull, and at Chelsea and King's Mountain, Que. (*Macoun.*) On rocks, Stony Lake, Peterborough Co., Ont. (*Thos. Walker.*) On earth, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On earth on rock, Kingston Mills, Ont., Sept. 23rd, 1901; St. Paul Island, Behring Sea, 1897. (*J. M. Macoun.*)

288. **C. symphycarpa**, FR.

On earth.

Labrador or Newfoundland with the var. *epiphylla*, Ach. (*Waghorne* fide *Eckfeldt.*) Tunnel Mountain, Banff, Rocky Mountains. (*Macoun.*) Cook's Inlet, at Fort Alexander, Alaska. (*Rothrock.*)

289. **C. Mitrula**, TUCKERM.

On earth in McKay's bush and at Britannia, six miles from Ottawa, Ont.; on earth on an old stump in pine woods, Seymour West, Northumberland Co., Ont.; on earth in woods, Camlachie, Lambton Co., Ont., June 18th, 1901. (*Macoun.*) Juneau, Alaska. (*Miss G. Cooley.*)

290. **C. cariosa**, (ACH.) SPRENG.

On earth and logs.

Battle Harbour, Labrador. (*Waghorne.*) Arctic America. (*Richardson.*) On earth, Cape Rosier, and Fox River, Gaspé Co., Que.; rather common on earth at Ottawa, Ont.; on earth at Belleville, Hastings Co., Ont.; on old logs in woods, Camlachie, Lambton Co., Ont., June 18th, 1901. (*Macoun.*) On earth, Nipigon River, and Lake Maria, Ont.; Island Lake, Algonquin Park, Ont., July, 1900; on earth at Banff and along the Elbow River and on Moose Mountain, Rocky Mountains; at Donald and Deer Park, Columbia River, B.C.; on earth along the Fraser River at Quesnel, B.C. (*Macoun.*)

291. *C. decorticata*, FLOERK.

On earth and rocks.

Cape Chudleigh, Hudson Strait. (*Dr. R. Bell.*) Bay of Islands, Newfoundland. (*Waghorne.*) Barren Grounds, Lat. 61°, Long. 104°W. (*J. W. Tyrrell.*) On earth, Lake Nipigon, July, 1884; on earth along Jumping Pound Creek, Rocky Mountains, June, 1897; on rocks at Hastings, Burrard Inlet, B.C.; on Sea's farm, Victoria, Vancouver Island. (*Macoun.*) Chilliwack Valley, B.C., 1901; Unalaska and Kadiak Island, Alaska, and St. Paul Island, Behring Sea. (*J. M. Macoun.*)

292. *C. pyxidata*, (LINN.) FR.

On earth, rocks, logs and stumps; common everywhere.

Greenland. (*Arct. Man.*) Arctic America. (*Richardson.*) Nottingham Island, Hudson Strait. (*Dr. R. Bell.*) On earth at Clearwater Lake, Labrador, July, 1896. (*A. P. Low.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On rocks, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) At Edmonton, Ont. (*James White.*) On old logs and earth, Credit Forks and at Stony Lake, Peterborough Co., Ont. (*Thos. Walker.*) On earth, east end of Sable Island, N.S., July, 1899; common on earth and logs at Baddeck and Margaree, Cape Breton Island, N.S., 1898; along Jupiter River, Anticosti, Que.; at Cape Rosier, Gaspé Co., Que.; common around Ottawa, Ont.; quite common at Belleville, Ont.; on earth, Queenston Heights, Ont., May 19th, 1901; on rocks, Algonquin Park, Ont., June, 1900; abundant at Thunder Bay, Lake Superior and along Lake Nipigon; Red Deer River and Lake Winnipegosis, Man.; in woods at Banff, Jumping Pound Creek and Moose Mountain, Rocky Mountains; at Deer Park, Lower Arrow Lake, Columbia River, B.C.; on old logs at Kamloops, B.C.; common at Victoria and on Mount Arrowsmith, Vancouver Island. (*Macoun.*) Thurlow Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*) On St. Paul Island, Behring Sea. (*J. M. Macoun.*) Chamisso Island; Eschscholtz Bay, and Elephant Point; Aliaska Peninsula, Alaska. (*Rothrock.*) Kotzebue Sound, Alaska. (*Turner.*)

Var. *Pocillum*, ACH.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Great Bear Lake, Arctic America. (*Richardson.*) On open prairie at

Old Wives' Creek, Assa.; on earth at the base of trees, Bragg's Creek, Rocky Mountains, 1897; on earth, Rockcliffe Park, Ottawa, Ont. (*Macoun.*) Islands of Behring Strait. (*Wright.*) Cape Vancouver, Unalaska Island, and St. George Island, Behring Sea. (*J. M. Macoun.*)

293. *C. fimbriata*, (LINN.) FR.

On earth and rotten logs, quite common.

Greenland. (*Arct. Man.*) Arctic America. (*Richardson.*) On earth, Clearwater Lake, Labrador, 1896. (*A. P. Low.*) On stones, L'Anse au Clair, Labrador; also John's Beach, Newfoundland. (*Waghorne.*) On earth at Edmonton, Ont. (*James White.*) On earth, rather rare, Sable Island, N.S., July, 1899; on old stumps at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; on earth, Cape Rosier, Gaspé Co., Que.; rather common on logs and stumps around Ottawa, Ont.; on dead wood, Seymour West, Northumberland Co., Ont.; on old stumps, Algonquin Park, Ont., June, 1900; rotten wood along Nipigon River, Ont.; on earth and logs, Lake Winnipegosis, Man.; on earth Cypress Hills, Assa.; on earth at Agassiz, B.C.; on old logs, Deer Park, Lower Arrow Lake, Columbia River, B.C.; on earth at Victoria and Nanaimo, Vancouver Island. (*Macoun.*)

Var. *tubæformis*, FR.

Very common on rotten wood.

On rocks, L'Anse au Clair, Labrador. (*Waghorne.*) Along the Tobique River, N.B. (*G. U. Hay.*) On old logs and stumps at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; on old logs at Britannia, Dow's swamp and other localities near Ottawa, Ont.; on earth and rotten logs, Belleville, Hastings Co., Ont.; on rotten logs, Seymour West, Northumberland Co., Ont.; on old logs, Algonquin Park, Ont., June, 1900; on earth at Lake Nipigon, Ont.; Port Colborne, Lake Erie, Ont.; on rotten logs, Lake Winnipegosis, Man.; on rotten logs, Cypress Hills, Assa.; on earth at Hector, and on old logs along Jumping Pound Creek, Rocky Mountains; on old logs at Revelstoke, B.C.; on earth, Deer Park, Lower Arrow Lake, Columbia River, B.C.; on earth on rocks at Agassiz, B.C.; on dead wood at Comox, Vancouver Island. (*Macoun.*) Crow's Nest Pass, Rocky Mountains; Adam's Lake Mountains, B.C.; Deceit Bay, Gulf of

Georgia, B.C. (*Dr. G. M. Dawson.*) Chilliwack Valley, B.C.; Port Etches, Alaska. (*J. M. Macoun.*) Sheep Creek, Juneau, Alaska. *Miss G. Cooley.*)

Var. **radiata**, FR.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) On old logs, Little Fox River, Gaspé Co., Que.; on the Porcupine Mountains, Man.; on earth on rocks at Agassiz, B.C. (*Macoun.*)

294. **C. degenerans**, FLOERK.

Greenland. (*Arct. Man.*) Battle Harbour, Labrador; Meadows, Newfoundland. (*Waghorne.*) On earth in Canada. (*Agassiz.*) Arctic America. (*Richardson.*) On the summit of Mount Albert, Shickshock Mountains, Gaspé Co., Que., Aug., 1882; on rocks, Deer Park, Columbia River, B.C., 1890. (*Macoun.*) On earth, St. Paul Island, Behring Sea, 1897. (*J. M. Macoun.*)

295 **C. gracilis**, (LINN.) NYL. var. **verticillata**, FR.

On earth in various forms from the Atlantic to the Pacific.

On earth, Coal River and Eagle River, Newfoundland. (*Waghorne.*) Greenland. (*Arct. Man.*) Along the Tobique River, N. B., 1884. (*G. U. Hay.*) Brackley Point, Prince Edward Island, 1888; on earth at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; on old land, rather rare, Sable Island, N.S., July, 1899; on boulders and earth around Ottawa, Ont.; on pine stumps, Seymour West, Ont.; along Nipigon River, Ont., 1884; at Donald, Columbia River, B.C., 1885; on rocks, Parson's Mountain, Vancouver Island, 1893. (*Macoun.*) Knox Bay, Gulf of Georgia, B. C., 1885. (*Dr. G. M. Dawson.*) Sitka and Kotzebue Sound, Alaska. (*Turner.*)

Var. **hybrida**, SCHÆR.

Quite common on earth, rocks and logs in woods.

Greenland. (*Arct. Man.*) On earth, Clearwater Lake, Labrador, 1896. (*A. P. Low.*) Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) Fort Good Hope, Mackenzie River, 1892. (*Miss E. Taylor.*) On earth along the Tobique River, N.B. (*G. U. Hay.*) On rocks, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On old logs at Edmonton, Ont. (*James White.*) On rotten logs, Credit Forks, Ont.; at Port Arthur, Lake Superior;

and Yorkton, Assa. (*Thos. Walker.*) On old stumps at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; Brackley Point, Prince Edward Island, 1888; Cape Rosier and Shickshock Mountains, Gaspé, 1882; on old stumps at Ottawa, Belleville and Seymour West, Ont.; on earth, Algonquin Park, Ont., June, 1900; common on north shore of Lake Superior and at Lake Nipigon; at Lake Winnipegosis, Man., 1885; common at Banff, Rocky Mountains, 1891; on earth, Jumping Pound Creek, Bragg's Creek and Mount Forget-me-not, Rocky Mountains, June, 1897; at Pass Creek, Sproat Mountain, Revelstoke and Deer Park, Columbia River, B.C.; in woods at Hastings, B.C., 1889; along the Telegraph Trail, B.C., 1875. (*Macoun.*) Mountains east of Adam's Lake, B.C., 1888; Deceit Bay, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*)

Var. *elongata*, Fr.

Quite common in the cool north woods.

At Nain, coast of Labrador. (*Dr. R. Bell.*) On earth Clearwater Lake, Labrador. (*A. P. Low.*) Blanc Sablon and L'Anse au Mort, Labrador, and Bolster Rock, Newfoundland; numerous forms. (*Waghorne.*) In the Barren Lands, Lat. 62° 03', Long. 103° 15' W., 1893. (*J. W. Tyrrell.*) At Dalhousie, N.B. (*J. Fletcher.*) Along the Tobique River, N.B. (*G. U. Hay.*) Canaan Forks, N. B. (*J. Moser.*) Both forms were common in woods at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; on earth at Truro, N.S., 1883; swamps at Cape Rosier, Gaspé, 1882; on an old pine log at Stittsville near Ottawa, Ont.; on earth at Lake Nipigon, Ont., 1884; on old logs, Red Deer River and Porcupine Mountains, Man., 1881; along Bragg's Creek and Jumping Pound Creek, Rocky Mountains, 1897; both forms *macroceras* and *chordalis* in mountain woods, Vancouver Island and at Hastings, B.C. (*Macoun.*) Mountains south of Tulameen River, B.C. (*Dr. G. M. Dawson.*) Chilliwack Valley, B.C.; St. Paul Island, Behring Sea, 1892. (*J. M. Macoun.*)

296. *C. cornuta*, (LINN.) FR.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) On earth, Smoky Mountain, Cape Breton Island, N.S., Aug. 2nd, 1898; on the ground northeast coast of Lake Superior; on earth in woods at Donald and Revelstoke, Columbia River, B.C.; along

the Telegraph Trail and Blackwater River, northern British Columbia, 1875. (*Macoun.*) British Columbia. (*Lyall.*)

297. *C. turgida*, (EHRH.) HOFFM.

Quite common on earth in damp woods.

Arctic America. (*Richardson.*) Newfoundland. (*Despreaux.*) On earth, Leading Tickle, Newfoundland. (*Waghorne.*) On earth along the River Rouge, Argenteuil Co., Que. (*D'Urban.*) At Domville, Que. (*N. K. Berg.*) North shore of Lake Superior. (*Agassiz.*) On earth on rocks at Margaree, Cape Breton Island, N.S., July 20th, 1898; Truro, N.S., 1883; Little Fox River, Gaspé, Que., 1882; near Belleville, Hastings Co., Ont., 1868; in woods at Banff and Morley, Rocky Mountains; along the Blackwater River, B.C. (*Macoun.*) Northwest coast of America. (*Herb. Hooker.*)

Var. *conspicua*, (SCHÆR.) NYL.

Quite common in woods, chiefly on earth on rocks.

On earth, Leading Tickle, Newfoundland. (*Waghorne.*) Along the Tobique River, N.B. (*G. U. Hay.*) Along Jupiter River, Anticosti, Que.; Gaspé Basin and Mount Albert, Gaspé Co., Que.; along the Nipigon River, Ont.; in woods, Duck Mountain, Man.; in woods at Donald, Columbia River, B.C. (*Macoun.*)

298. *C. Papillaria*, (EHRH.) HOFFM.

On earth at Truro, N.S., June 12th, 1883. (*Macoun.*) Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*)

299. *C. cenotea*, (ACH.) SCHÆR.

On rotten logs and on earth in woods.

M'Iver's Cove and Middle Arm, Newfoundland. (*Waghorne.*) On rotten logs at Baddeck, Cape Breton Island N.S., July 9th, 1898; on logs in woods at Banff, Rocky Mountains; in woods at Donald and Deer Park on the Columbia River, B.C.; on rocks near Victoria, Vancouver Island. (*Macoun.*) Island in Cross Sound, Alaska; Mr. Willey doubtfully refers here forms from Cook's Inlet and Sitka. (*Rothrock.*)

300. *C. squamosa*, HOFFM.

On earth, mossy rocks and old logs in woods.

Greenland. (*Arct. Man.*) On rocks at Nain, Labrador. (*Dr. R. Bell.*) On earth, Clearwater Lake, Labrador. (*A. P. Low.*) Forteau Bay and L'Anse au Mort, Labrador; Cook's Brook, Coal River, Grand Lake, Bay of Islands, Alfrey Beach, Meadows and Villa Cove, Newfoundland; various forms collected. (*Waghorne.*) On earth, Tobique River, N.B. (*G. U. Hay.*) North shore of Lake Superior. (*Agassiz.*) Lake Winnipeg and north-west coast. (*Herb. Hooker.*) On rocks at the Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898; on rocks at Halifax, N.S., along the Ste. Anne des Monts River, Gaspé Co., Que.; on old pine stumps at Britannia, six miles west of Ottawa, Ont.; on earth, Argouquin Park, Ont.; June, 1900; on earth at Sudbury Junction and Lake Nipigon, and on rocks north shore of Lake Superior; on rocks at Hastings, B.C., and in the vicinity of Victoria, Vancouver Island. (*Macoun.*) On mountains east of Adam's Lake, B.C.; on Texada and Hansen islands, and at Blackwater River and Knox Bay, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*) Attu Island, Behring Sea, 1891. (*J. M. Macoun.*) At Warm Springs, Sitka, Alaska. (*Rothrock.*) Sheep Creek, Juneau, Alaska; also at Nanaimo, Vancouver Island. (*Miss G. Cooley.*)

301. *C. delicata*, (EHRH.) FLOERK.

On decaying wood along Ste. Anne des Monts River, Gaspé Co., Que.; also on pine roots at Wooler, Ont., Oct. 17th, 1893; on rotten stumps and logs at Britannia, Stittsville, Hull and Buckingham, near Ottawa, Ont. (*Macoun.*)

302. *C. caespiticia*, (PERS.) FLOERK.

On boulders, Big Intervale, Margaree, Cape Breton Island, N.S., July 16th, 1898. (*Macoun.*)

303. *C. furcata*, (HUDS.) FR. var. *crispata*, FLOERK.

On earth, quite common.

Greenland. (*Arct. Man.*) Arctic America and Rocky Mountains. (*Herb. Hooker.*) On earth, Eagle River, Sandwich Bay and Indian Harbour, Labrador, also Bay of Exploits, Newfoundland. (*Waghorne.*) Newfoundland. (*Despreaux.*) Along the

Tobique River, N.B. (*G. U. Hay.*) On earth, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) Common on earth at Baddeck, Englishtown and Margaree, Cape Breton Island, N.S., July, 1898; on Mount Albert, Gaspé Co., Que.; on earth at Britannia, Rockcliffe Park, near Ottawa, Ont., and Hull, Que.; in woods near Belleville, Hastings Co., Ont.; on earth, Algonquin Park, Ont., June, 1900; on earth, northeast coast of Lake Superior and shores of Lake Nipigon; on earth, Red Deer River, Porcupine Mountains, Man.; on House Mountain, near Lesser Slave Lake, Atha., 1872; at Pass Creek, Columbia River, B.C.; along Bragg's Creek, near the Elbow divide, Rocky Mountains; on old logs, Victoria, Vancouver Island, and Salt Spring Island, Gulf of Georgia. (*Macoun.*) On Harbledon, Texada and Thurlow islands, Gulf of Georgia. (*Dr. G. M. Dawson.*)

Var. **racemosa**, FLOERK.

Greenland. (*Arct. Man.*) Lark Harbor and River Head, Newfoundland. (*Waghorne.*) On earth along Tobique River, N.B. (*G. U. Hay.*) On earth, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On earth along the River Rouge, Argenteuil Co., Que. (*D'Urban.*) On gravel below the whirlpool, Niagara Falls, Ont., 1895. (*R. Cameron.*) On earth at Baddeck, Cape Breton Island, N.S., July, 1898; on earth at Truro, N.S.; at Rockcliffe Park, and in McKay's bush, Ottawa, Ont.; in damp woods at Belleville, Hastings Co., Ont.; on earth in woods, Queenston Heights, Ont., May 9th, 1901; on rocks, Algonquin Park, Ont., June, 1900; at Hastings, B.C., and along the Burnside Road, Victoria, Vancouver Island. (*Macoun.*) Hansen Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*)

Var. **subulata**, FLOERK.

Greenland. (*Arct. Man.*) Labrador or Newfoundland, with vars. *squamulosa*, Schr., and *adpersa*, Fl. (*Waghorne fide Eckfeldt.*) On earth along the Tobique River, N.B. (*G. U. Hay.*) On rocks, Lake Nipigon (this is a doubtful specimen); not uncommon on Sable Island, N.S., July, 1897; on rocks, Hastings, B.C.; on rocks near Victoria and at Comox, Vancouver Island. (*Macoun.*) Henslow and Hanson islands, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*) St. Paul and St. George islands, Behring Sea. (*J. M. Macoun.*)

Var. *pungens*, FRIES.

Greenland. (*Arct. Man.*) On rocks at Margaree, Cape Breton Island, N.S., July 20th, 1898; on earth at Belleville, Ont. (*Macoun.*) Earltown Lakes, N.S., Aug. 10th, 1883. (*Dr. A. McKay.*) North shore of Lake Superior. (*Agassiz.*)

304. *C. rangiferina*, (LINN.) HOFFM.

On earth in woods, very common.

Greenland. (*Arct. Man.*) On Baffin Land, north of Hudson Strait, Aug., 1897; at Nain, coast of Labrador. (*Dr. R. Bell.*) On earth, Clearwater Lake, Labrador, 1896. (*A. P. Low.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On earth in the Barren Grounds, Lat. 61°, Long. 104°, W.; Parry's Falls, Great Slave Lake, May 15th, 1900. (*J. W. Tyrrell.*) On earth, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) In woods along the River Rouge, Argenteuil Co., Que. (*D'Urban.*) On dry grounds, Credit Forks, Ont. (*Thos. Walker.*) On the ground at Edmonton, Ont. (*James White.*) On earth, Sable Island, N.S., July, 1899; on earth at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; vicinity of Ottawa, and at Belleville, Ont.; on earth in woods, Queenston Heights, Ont., May 9th, 1901; on earth and rocks, Algonquin Park, June, 1900; in sandy woods, Chalk River, Ont.; on rocks at Nipigon River, Ont.; on earth, Thunder Bay, Lake Superior; Deer Park, Columbia River, B.C.; at Burrard Inlet, B.C. (*Macoun.*) On earth on rocks, Kingston Mills, Ont., Sept. 23rd, 1901; Chilliwack Valley, B.C.; St. George and St. Paul islands, Behring Sea. (*J. M. Macoun.*) Common in Alaska. (*Rothrock.*) Salmon Creek and Sheep Creek, near Juneau, Alaska. (*Miss G. Cooley.*) Alaska. (*Turner.*)

305. *C. sylvatica*, LINN.

Quite common in woods, especially westward.

Greenland. (*Arct. Man.*) Baffin Land, north of Hudson Strait, and at Nain, coast of Labrador. (*Dr. R. Bell.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Near Fort Norman, Mackenzie River, 1892. (*Miss E. Taylor.*) On earth, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On earth, Sable Island, N.S., July, 1899; in woods at Margaree, Cape Breton Island, N.S., 1898; at Chalk River and Belleville, Ont.; on earth

and rocks, Algonquin Park, Ont., July, 1900; in woods, Duck Mountain, Man.; common in Bow River Pass and at Banff, Rocky Mountains; on earth along Jumping Pound Creek, and on Moose Mountain, Rocky Mountains, alt. 6,500 feet; along the Telegraph Trail, B.C., 1875; on earth, Roger's Pass, Rocky Mountains; at Deer Park, Columbia River, B.C.; Burrard Inlet, B.C.; on rocks, Parson's Mountain, Victoria, and on Mount Benson, Nanaimo, Vancouver Island. (*Macoun.*) Hanson Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*) Cape Vancouver, Behring Sea; St. George Island, Behring Sea. (*J. M. Macoun.*) Salmon Creek and Sheep Creek, Juneau, Alaska. (*Miss G. Cooley.*) Alaska. (*Turner.*)

Var. *alpestris*, LINN.

Rather common in dark, cool woods.

On rocks, at Nain, coast of Labrador. (*Dr. R. Bell.*) On earth, Clearwater Lake, 1896. (*A. P. Low.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Parry's Falls, Great Slave Lake, May 15th, 1900. (*J. W. Tyrrell.*) On earth, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) Stony Lake, Peterborough Co., Ont. (*Thos. Walker.*) On earth, east end of Sable Island, N.S., Aug., 1899; on earth at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; on earth at Truro, N.S.; on Mount Albert, Gaspé Co., Que.; on rotten stumps at Britannia, near Ottawa, Ont.; on rocks in woods, Algonquin Park, Ont., July, 1900; northeast coast of Lake Superior; on Duck Mountain, Man.; on rocks in woods, Banff, Rocky Mountains; at McLeod's Lake, northern British Columbia, 1875. (*Macoun.*) St. Paul Island, Behring Sea, July, 1897. (*J. M. Macoun.*)

306. *C. Botrytis*, (HAG.) HOFFM.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On old logs, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On old logs along Bragg's Creek, Elbow River, Rocky Mountains, July 9th, 1897; on old pine logs, Lake Nipissing, Ont., May 29th, 1884; on rotten pine wood, northern British Columbia, June, 1875. (*Macoun.*)

307. *C. carneola*, FRIES.

On earth in Greenland, 1831. (*Fries.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

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Var. **cyanipes**, SOMMERF.

Greenland. (*Arct. Man.*) Newfoundland. (*Despreaux.*) Pinware River, Labrador. (*Waghorne.*)

308. **C. amaurocræa**, (FLÆRKE) SCHÆR.

Greenland. (*Arct. Man.*) On stones, Battle River, L'Anse au Loup, and L'Anse au Mort, Labrador. (*Waghorne.*) On earth, Arctic America. (*Richardson.*) Newfoundland. (*Despreaux.*) North shore of Lake Superior. (*Agassiz.*) On rocks at Lake Nipigon; also on earth at Otter Head, Lake Superior; vicinity of Victoria, Vancouver Island, 1875. (*Macoun.*) Along Peel's River, Mackenzie River, July 15th, 1892. (*Miss E. Taylor.*)

309. **C. uncialis**, (LINN.) FR.

East of Ste. Modeste, Labrador. (*Waghorne.*) On earth, Arctic America, (*Richardson.*) Western Greenland. (*Warming & Holm.*) Chilliwack Valley, B.C.; on St. George Island, Behring Sea, Aug., 1891. (*J. M. Macoun.*) Sitka and Kotzebue Sound, Alaska. (*Turner.*)

Var. **adunca**, FR.

On earth throughout the continent.

L'Anse au Loup and Blanc Sablon, Labrador. (*Waghorne.*) On earth, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On earth in woods, Baddeck and Half-Way Brook, Cape Breton Island, N.S.; Mount Albert, Gaspé Co., Que.; on earth at Chelsea and King's Mountain, Que.; in pine woods at Chalk River and Belleville, Ont.; on rocks, Algonquin Park, Ont., July, 1900; north shore of Lake Superior; on earth on rocks, Pass Creek, Columbia River, B.C.; on earth on rocks at Victoria, Comox, and on Mount Benson, Nanaimo, Vancouver Island. (*Macoun.*)

Var. **Caroliniana**, TÜCKERM.

Near Blanc Sablon, Labrador. (*Waghorne.*)

Var. **turgescens**, FR.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) St. Paul Island, Behring Sea, June 28th, 1897. (*J. M. Macoun.*)

310. **C. Boryi**, TUCKERM.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) On earth near the sea, Newfoundland. (*Despreaux*.) Coast of Labrador. (*M. W. A. Stearns*.) On sandy earth, Sable Island, N.S., July, 1899; Salt Lake, Anticosti, August, 1883. (*Macoun*.)

311. **C. chlorophæa**, FLÆRKE.

L'Anse au Mort and East Ste. Modeste, Labrador. (*Waghorne*.)

312. **C. Cornucopioides**, (LINN.) FR.

On earth in sterile soils, quite common northward.

West Greenland. (*Warming*.) Arctic America. (*Richardson*.) Clearwater Lake, Labrador, 1896. (*A. P. Low*.) Fox Cove and East Ste. Modeste, Labrador. (*Waghorne*.) On the Barren Grounds, Lat. 61°, Long. 104° W. (*J. W. Tyrrell*.) In woods along the Rouge River, Argenteuil Co., Que. (*D'Urban*.) On Mount Albert, Gaspé Co., Que.; on earth, North Hastings, Ont.; north shore of Lake Superior and at Lake Nipigon; on House Mountain, near Little Slave Lake, Atha., 1872; along Jumping Pound Creek, Rocky Mountains, June, 1897; on earth at Hector, Rocky Mountains; on rocks, Deer Park and Pass Creek, Columbia River, B.C.; on rocks at Hastings, Burrard Inlet, B.C.; and at Comox, Vancouver Island. (*Macoun*.) Johnson's Strait, Gulf of Georgia, B.C. (*Dr. G. M. Dawson*.) St. Paul, St. George and Unalaska islands, Behring Sea. (*J. M. Macoun*.) Port Althorp, Alaska, (*Rothrock*.)

313. **C. bellidiflora**, (ACH.) SCHÆR.

On earth and on rocks, chiefly westward.

Greenland. (*Flærke*.) West Greenland. (*Warming*.) Seal Lake, Labrador, July, 1896. (*A. P. Low*.) L'Anse au Mort, Labrador. (*Waghorne*.) Coast of Labrador. (*Wenck*.) Newfoundland. (*Despreaux*.) On rocks, vicinity of Victoria, Mount Benson, near Nanaimo, Vancouver Island, and on Salt Spring Island, Gulf of Georgia; also at Hastings, Burrard Inlet, B.C. (*Macoun*.) On rocks, Thurlow Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson*.) Chilliwack Valley, B.C., 1901; St. George and St. Paul islands, Behring Sea; Middleton Island, Port Etches and Sitka, Alaska. (*J. M. Macoun*.)

314. *C. deformis*, (LINN.) HOFFM.

Greenland. (*Arct. Man.*) Eagle River and Sandwich Bay, Labrador. (*Waghorne.*) Clearwater Lake, Labrador, 1896. (*A. P. Low.*) Newfoundland. (*Despreaux.*) Barren Grounds, Lat. 61°, Long. 104° W. (*J. W. Tyrrell.*) On earth, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On earth in swamps at Port Arthur, Lake Superior. (*Thos. Walker.*) North shore of Lake Superior. (*Agassiz.*) On earth, old land, Sable Island, N.S., July, 1899; on logs at Margaree, Cape Breton Island, N.S., July, 1898; on earth, Cape Rosier, Gaspé Co., Que.; Lake Flora, Hull, and at Stittsville, Chelsea and Britannia near Ottawa, Ont.; on earth and rotten wood, Algonquin Park, Ont., June, 1900; along Lake Nipigon, Ont.; on earth, Red Deer River, Porcupine Mountains, Man.; in woods at Banff, Rocky Mountains; along Jumping Pound Creek, Rocky Mountains, 1897; at Donald, Columbia River, B.C.; along the Telegraph Trail and Blackwater River; northern British Columbia; Burnside Road, near Victoria, Vancouver Island, 1893. (*Macoun.*) Mountains east of Adam's Lake, B.C.; Thurlow Island, Gulf of Georgia. These specimens are doubtful. (*Dr. G. M. Dawson.*) Chilliwack Valley, B.C. (*J. M. Macoun.*) Kotzebue Sound, Alaska (*Turner.*)

315. *C. digitata*, (LINN.) HOFFM.

On earth and rotten wood.

Greenland. (*Vahl.*) Canada. (*A. T. Drummond.*) Eagle River, Labrador. (*Waghorne.*) On old pine stumps at Britannia, Ont., and west of Hull, Que.; on the bases of pine stumps, near Wooler, Ont.; on old logs, Island Lake, Algonquin Park, Ont., July, 1900; on old logs, Bragg's Creek, Elbow River, Rocky Mountains, 1897. (*Macoun.*) Old Sitka, Alaska. (*Rothrock.*)

316. *C. macilenta*, (EHRH.) HOFFM.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On rotten wood at Victoria, 1887, and along the Burnside road near Esquimault, Vancouver Island, 1893. (*Macoun.*) Loring, Alaska. (*Miss G. Cooley.*)

317. *C. pulchella*, SCHW.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

318. **C. cristatella**, TUCKERM.

On earth and dead wood ; common in the east. With us it is generally found on old pine logs and stumps.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) On old land, Sable Island, N.S., July, 1899 ; on logs and stumps at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898 ; on old logs at Truro, N.S. ; on earth in woods, Rustico Bay, Prince Edward Island ; on earth, Cape Rosier, Gaspé Co., Que. ; on dead wood, common at Ottawa, Belleville, Wooler and Campbellford, Ont. ; on earth and stumps, Algonquin Park, Ont. ; June, 1900 ; on earth, northeast coast of Lake Superior. (*Macoun*.) Lake region, N.B. ; also along the Tobique River, B.C. (*G. U. Hay*.) On old logs, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme*.) On rotten roots at Edmonton, Ont. (*James White*.) On old logs, London, Ont. (*J. Dearness*.) On old wood at Credit Forks, Ont. ; and at Port Arthur, Lake Superior. (*Th s. Walker*.)

319. **C. Flørkeana**, FR.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.)

320. **C. multibrachiata**, (FLØRKE) ECKFELDT.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.)

321. **ochrochlora**, FLØRKE.

Birchy Cove and John's Beach, Newfoundland. (*Waghorne*.)

322. **C. pycnotheliza**, NYL.

Wood's Island and Lake Harbour, Newfoundland. (*Waghorne*.)

323. **C. subcariosa**, NYL.

Grand Lake, Newfoundland. (*Waghorne*.)

34. **THAMNOLIA**, (Ach.) MASS.324. **T. vermicularis**, (Sw.) SCHÆR.

On earth in northern and alpine districts.

Greenland. (*Arct. Man*.) Battle Harbour, Labrador and Newfoundland. (*Waghorne*.) Arctic America. (*Richardson*.)

Mansfield Island, Hudson Strait. (*Dr. R. Bell.*) Amongst moss, Mount Albert, Gaspé Co., Que.; Bow River Pass and Sulphur Mountain, Banff; at Hector and Moose Mountain, Rocky Mountains; on rocks near Victoria, on Mount Benson near Nanaimo, and on Mount Arrowsmith, Vancouver Island. (*Macoun.*) Port Eches, Alaska, and Unalaska, Behring Sea. (*J. M. Macoun.*)

35. *BÆOMYCES*, Pers., DC.

325. *B. placophyllus*, Ach.

On earth along the Gaspé Coast, below St. Anne des Monts River, Que., Aug. 14th, 1882. (*Macoun.*)

326. *B. Byssoides*, (Linn.) Schær.

On earth and rocks on elevated regions.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On earth at Baddeck, Cape Breton Island, N.S., July, 1898; along the Madeline River, Gaspé Co., Que.; on rocks on islands in Lake Nipigon; on earth on the prairie at Old Wives Creek, Assa., May, 1895; also on rocks at Hector, Rocky Mountains. (*Macoun.*)

327. *B. roseus*, Pers.

On sterile earth, common eastward.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Bass River, Kent Co., N.B. (*Prof. Fowler.*) Cape Rosier, Gaspé Co., Que.; at Truro, N.S.; Brackley Point, Prince Edward Island; abundant at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898. (*Macoun.*)

328. *B. æruginosus*, (Scop.) DC.

Rotten wood and moss in cool forests; common.

Greenland. (*Arct. Man.*) Arctic America. (*Richardson.*) Clearwater Lake, Labrador, July, 1896. (*A. P. Low.*) On rotten wood, L'Anse au Mort, Labrador. (*Waghorne.*) On moss in the Barren Grounds, Lat. 61°, Long. 104', W. (*J. W. Tyrrell.*) On moss, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) Spence's Lake, St. John, N.B. (*G. U. Hay.*) North shore of Lake Superior. (*Agassiz.*) On old logs and moss, common on Cape Breton Island, N.S.; on dead wood at Truro, N.S.; on earth at Salt Lake,

Anticosti ; on old logs, Ste. Anne des Monts River, Gaspé Co., Que.; on old pine logs at Meech's Lake and Buckingham, Que.; on wood, Lake Nipigon and on moss northeast shore of Lake Superior; along Peace River, Lat. 56°, 1872; on old logs at Banff and Hector, Rocky Mountains; at McLeod's Lake, B.C.; on logs, Bragg's Creek and on Elbow Divide, Rocky Mountains, 1897, on dead wood, Parson's Mountain, Victoria, Vancouver Island. (*Macoun.*) Mountains east of Adam's Lake, B.C.; on Thurlow Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*) West coast of British Columbia to Sitka. (*Hall.*) Port Etches and Sitka Island, Alaska. (*J. M. Macoun.*) Sitka and Port Althorp, Alaska. (*Rothrock.*) Loring and Salmon Creek near Juneau, Alaska. (*Miss G. Cooley.*)

36. BIATORA, Fries.

329. *B. atro-rufa*, (Dicks.) Fr.

On earth in alpine districts.

Greenland. (*Eberlin.*) Tadousac, Que. (*A. T. Drummond.*) On earth on Moose Mountain, Rocky Mountains, July, 1897, alt. 6,000 feet; on rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C.; on earth, summit of Mount Arrowsmith, Vancouver Island. (*Macoun.*)

330. *B. lurida*, (Sw.) Fr.

On earth on Moose Mountain, Rocky Mountains, July 3rd, 1897, alt. 6,500 feet. (*Macoun.*)

331. *B. globifera*, (Ach.) Fr.

On calcareous earth, Greenland. (*Vahl.*)

332. *B. rubiformis*, (Vahl.) Fr.

On earth in Greenland and elsewhere in Arctic America. (*Th. Fries.*) On earth, Moose Mountain, Rocky Mountains, June 30th, 1897, alt. 6,500 feet. (*Macoun.*)

333. *B. rufo-nigra*, Tuckerm.

On rocks, north shore of Lake Superior, (*Agassiz.*) On rocks along Lake Nipigon, northeast coast of Lake Superior, July, 27th,

1869; at Fort Chipweyan and in northern British Columbia. (*Macoun.*) South Fowl Lake, boundary between Ontario and Minnesota, June 26th, 1897. (*Fink.*)

334. **B. testacea**, HOFFM.

On the highest bluff at the Police Station, Wood Mountain, Assa., June 10th, 1895; on earth along Jumping Pound Creek, Rocky Mountains, June 14th, 1897. (*Macoun.*)

335. **B. Russellii**, TUCKERM.

On rocks, Blackwater River, northern British Columbia, June 11th, 1875; on rocks, Deer Park, Columbia River, B.C. (*Macoun.*)

336. **B. scotopholis**, TUCKERM.

On earth at Morley, Bow River valley, Rocky Mountains, June 13th, 1885. (*Macoun.*)

337. **B. decipiens**, (EHRH.) FR.

On earth in calcareous districts.

Greenland. (*Arct. Man.*) Arctic America. (*Richardson.*) Salt Lake, Anticosti, Que.; on earth at Pheasant Mountain, Assa.; on earth along Old Wives' Creek and south of Wood Mountain, Assa.; on earth Moose Mountain, Rocky Mountains, June, 1897; at C  che Creek and Spence's Bridge, B.C. (*Macoun.*)

338. **B. icterica**, MONT.

On earth at Revelstoke, on the Columbia River, B.C., May 4th, 1890. (*Macoun.*)

339. **B. coarctata**, (SM., NYL.) TUCKERM.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) On limestone rocks at Britannia, 6 miles west of Ottawa, Ont., April 20th, 1895. (*Macoun.*)

340. **B. granulosa**, (EHRH.) POETSCH.

On turfy and sandy soil and on dead mosses and dead wood.

Arctic America. (*Richardson.*) On earth, White Bear River, Newfoundland. (*Waghorne.*) Quebec. (*A. T. Drummond.*) On

earth, Half Way Brook, Cape Breton Island, N.S., July, 1898; on earth, coast of Gaspé Co., Que.; on old pine logs and stumps at Britannia, near Ottawa, Ont., and at King's Mountain, near Chelsea, Que.; on earth on rocks, Algonquin Park, Ont., June, 1900; along Nipigon River and east coast of Lake Superior; on earth in woods at Banff, Rocky Mountains; on earth on rocks at Lake Mara, Sicamous, B.C., July, 1889; on Mount Benson, near Nanaimo, Vancouver Island. (*Macoun.*) Rocky Mountains. (*Bourgeau.*) Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

341. **B. flexuosa**, FRIES.

On dead wood.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On old cedar rails at Port Rowan, close to Lake Erie, July 24th, 1892; on dead pine wood, Nipigon River, Ont. (*Macoun.*)

342. **B. viridescens**, (SCHRAD.) FR.

On dead wood, Big Intervale, Margaree, Cape Breton Island, N.S., July 16th, 1898. (*Macoun.*)

343. **B. peliaspis**, TUCKERM.

On living bark and dead wood of conifers. (*Tuckerman.*) On living bark of balsam fir, Gaspé Basin, Gaspé Co., Que., Aug. 11th, 1882. (*Macoun.*)

344. **B. russula**, (ACH.) MONT.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

345. **B. cinnabarina**, (SOMMERF.) FR.

On shrubs, Greenland. (*Vahl.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On spruce bark and twigs at Cedar Hill, Victoria, Vancouver Island, May 14th, 1887. (*Macoun.*) Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

346. **B. cuprea**, (SOMMERF.) FR.

On the earth in alpine regions.

Greenland. (*Vahl.*) Islands of Behring Strait. (*Wright.*)

347. **B. vernalis**, (LINN.) FR.

Upon mosses and bark ; more rarely on dead wood.

Greenland. (*Arct. Man*) Arctic America. (*Richardson*.) L'Anse au Mort, Labrador ; on moss, Shoal Point, Chimney Cove and Lark Harbour, Newfoundland. (*Waghorne*.) On earth on rocks, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme*.) North shore of Lake Superior. (*Agassiz*.) On moss on rocks and on spruce trees at Margaree, Cape Breton Island, N.S., July, 1898 ; on moss along the Ste. Anne des Monts River, Gaspé Co., Que. ; upon moss at Sudbury Junction, Ont. ; on bark of trees, Red Deer River, Porcupine Mountains, Man. ; on earth, Jumping Pound Creek and on Moose Mountain, Rocky Mountains, June, 1897. (*Macoun*.)

Var. **helvola**, KOERB.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) On bark of spruce trees, Salt Lake, Anticosti, Que. ; Aug. 10th, 1883 ; on bark of Douglas fir, Hastings, Burrard Inlet, B.C., April 10th, 1889. (*Macoun*.)

348. **B. sanguineo-atra**, (FR.) TUCKERM.

On dead mosses at the base of trees and on earth.

Middle Arm, Newfoundland. (*Waghorne*.) Greenland. (*Arct. Man*.) Quebec. (*A. T. Drummond*.) On moss, Salt Lake, Anticosti, Que. ; on earth, Brackley Point, Prince Edward Island ; on bark of balsam and spruce at Baddeck, Cape Breton Island, N.S., July 9th, 1898 ; on moss at the base of trees in Dow's swamp and other places at Ottawa, Ont. ; at Belleville, Hastings Co., Ont. ; on earth, Lake Nipissing, Ont. ; on earth near Lesser Slave Lake, Atha. ; on earth along Bragg's Creek, Rocky Mountains, Alta., June, 1897. (*Macoun*.) On logs, Old Sitka, Alaska. (*Rothrock*.)

349. **fusciorubens**, Nyl.

On rocks in company with *Biatora rupestris* at Middle Arm, Newfoundland. (*Waghorne*.)

350. **B. Berengeriana**, TH. FR.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) On earth along Ste. Anne des Monts River, Gaspé Co., Que., 1882 ;

on earth at Belleville, Hastings Co., Ont., 1882; on earth along Nipigon River, Ont., 1884; on earth along Jumping Pound Creek, on Moose Mountain and at Banff, Rocky Mountains; on earth on rocks at Deer Park, Arrow Lakes, Columbia River, B.C., 1890. (*Macoun.*)

351. **B. rufo-fusca**, ANZ.

Upon turfy earth in alpine districts.

Green and. (*Vahl.*) On earth and moss at Donald, Columbia River, B.C., July 6th, 1885. (*Macoun.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

352. **B. turgidula**, (FR.) NYL.

On the bark of coniferous trees and on dead wood.

Green and. (*Vahl.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

353. **B. rivulosa**, (ACH.) FR.

On rocks.

Arctic America. (*Richardson.*) On bark of living beech trees at Ottawa, April 19th, 1898. (*Macoun.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

354. **B. arcuatula**, (ARN.) ECKFELDT.

On rocks, Labrador or Newfoundland. Closely related to *B. rivulosa*. (*Waghorne fide Eckfeldt.*)

355. **B. leucophæa**, FLOERKE.

Granite rocks in mountainous and arctic regions. Arctic America. (*Tuckerm.*)

356. **B. scrupulosa**, ECKFELDT.

Labrador or Newfoundland. A well-marked species which seems to approach *B. Kochiana* Hepp. (*Waghorne fide Eckfeldt.*)

357. **B. albo-fuscescens**, (NYL.) ECKFELDT.

On rocks, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

358. **B. mollis**, WAHL.

On rocks, Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.)

359. **B. fuscescens**, (SOMMERF.) FRIES.

On the bark of young birch, and often trees and shrubs. (*Fries*.)
Greenland. (*Vahl*.)

360. **B. Paddensis**, TUCKERM.

On maple and beech bark on the mountain side, Big Intervale,
Margaree, Cape Breton Island, N.S., July 22nd, 1898. (*Macoun*.)

361. **B. Nylanderi**, ANZ.

On old staging at Frenchman's Cove, Newfoundland. (*Waghorne*.)

362. **B. Tornoensis**, (NYL.) TH. FR.

On various trees and shrubs in Europe. Also in Arctic America.
(*Fries*.) Greenland. (*Vahl*.) On vine maple (*Acer circinatum*)
at Hastings, B.C., April 14th, 1889. (*Macoun*.)

363. **B. uliginosa**, (SCHRAD.) FR.

On turfy earth, sand, charred pine stumps, and rotting wood.
Greenland. (*Arct. Man*.) Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) On peaty earth, Salt Lake, Anticosti,
Que.; on earth, Algonquin Park, Ont., July, 1900; on earth on
rocks, Deer Park, Columbia River, B.C. (*Macoun*.)

364. **B. varians**, (ACH.) TUCKERM.

On bark, very common; also on dead wood.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) On
alder bark, Cove Head, Prince Edward Island; very common on
bark of *Alnus incana* at Baddeck, Cape Breton Island, N.S., July,
1898; on maple bark at Casselman near Ottawa, Ont.; on blue
beech at Aylmer, Que.; on poplar bark near Wooler, Ont.; on
young pine trees at Belleville, Hastings Co., Ont.; on maple
twigs near Hastings, Burrard Inlet, B.C.; and on poplar trees,
Sea's farm, Victoria, Vancouver Island. (*Macoun*.)

365. **B. lucida**, (ACH.) FR.

On rocks in shaded places, on the bare roots of trees, and on dead wood. (*Tuckerman.*) Arctic America. (*Richardson.*)

366. **B. flavido-livens**, TUCKERM. (*In litteris.*)

On bark of Balsam fir at Brackley Point, Prince Edward Island, July 5th, 1888. (*Macoun.*)

367. **B. oxyspora**, (TUL.) TUCKERM.

On *Parmelia Borreri* in McKay's woods, Ottawa, Ont., and on the same species at Lake Nipigon, Ont., July 14th, 1884. (*Macoun.*)

368. **B. mixta**, FR.

On living bark and also less commonly on dead wood. (*Tuckerman.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On bark of ash and other trees, Truro, N.S.; on young poplars, Sea's farm, near Victoria, Vancouver Island; on spruce bark in woods at Baddeck, Cape Breton Island, N.S., July 29th, 1898. (*Macoun.*) On bark of trees, London, Ont. (*A. T. Drummond.*)

369. **B. atropurpurea**, (MASS.) HEPP.

On bark, also on dead wood. (*Tuckerman.*) On bark of dead wood, Middle Arm and Coal River, Newfoundland. (*Waghorne.*) On living beech trees at Belleville, Hastings Co., Ont., April 20th, 1879; on beech bark near Hemlock Lake, Ottawa, Ont., September 6th, 1891. (*Macoun.*)

370. **B. Laureri**, (HEPP.) TUCKERM.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On beech trees at Margaree, Cape Breton Island, N.S., July, 1898; on beech bark, both living and dead, at Ottawa, Ont., common; abundant on beech trees around St. Catharines and Niagara Falls, Ont., May, 1901. (*Macoun.*) Quebec. (*A. T. Drummond.*) On bark of trees, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On beech trees at Edmonton, Ont. (*James White.*) On beech bark at Credit Forks, Ont. (*Thos. Walker.*) Alaska. (*Hall.*)

371. **B. cyrtella**, (ACH., NYL.) TUCKERM.

On hickory bark (*Carya alba*) at Belleville, Hastings Co., Ont.; on bark of *Alnus incana* near the Hogsback, Rideau River, May 7th, 1897; on poplar trees, Old Wives' Creek, Assa., May 30th, 1895; on alders near Hastings, Burrard Inlet, B.C., 1889. (*Macoun.*)

372. **B. Heerii**, HEPP.

Parasitic on *So'orina saccata*.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

373. **B. stereocaulorum**, (TH. FR.) ECKFELDT.

Parasitic on *Stereocaulon alpinum*.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

374. **B. globulosa**, (FLOERKE.) HEPP.

On dead wood of conifers. (*Tuckerman.*) On poplar bark in Stewart's bush, near Ottawa, Ont., April 13th, 1895; on dead pine wood, Telegraph Trail, northern British Columbia, June 12th, 1875. (*Macoun.*) On bark, Nagai Island, Shumigan Group, Alaska, 1892. (*J. M. Macoun.*)

375. **B. micrococca**, KOERB.

On old cedar rails (*Thuja occidentalis*) west of the old toll-gate, Aylmer road, Hull, Que., Oct. 6th, 1898. (*Macoun.*)

376. **B. sphæroides**, (DICKS.) TUCKERM.

Upon turfy earth and mosses on rocks, in high northern regions. (*Tuckerman.*) On moss, St. John's beach, Newfoundland. (*Waghorne.*) On mosses in woods at Ottawa, Ont.; bases of trees, Carleton Place, Ont.; on the earth at the base of trees, Algonquin Park, Ont., June, 1900; on moss, northeast coast of Lake Superior; on moss at the base of trees, Red Deer River, Porcupine Mountains, Man.; on rocks, Tunnel Mountain, Banff, on rocks at Hector; on earth along Jumping Pound Creek and on Mount Forget-me-not, Rocky Mountains, 1897; along the Blackwater River, northern British Columbia, 1875. (*Macoun.*) Islands of Behring Strait. (*Wright.*)

377. **B. hypnophila**, (TURN.) TUCKERM.

On mosses, stones, earth, dead wood and living bark. (*Tuckerman.*) Greenland. (*Vahl.*) On moss, Middle Arm, St. John's beach and Pleasant Cove, Newfoundland. (*Waghorne.*) On dead wood, Ottawa, Ont. (*A. T. Drummond.*) On moss on rocks, bark and fence-rails at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; on dead wood and moss, Gaspé coast, Que.; on moss on rocks and on old rails at Ottawa, Ont.; on the bases of trees, Seymour West, Northumberland Co., Ont.; on moss at the base of trees, Algonquin Park, Ont., June, 1900; on dead bark, Lake Nipigon, and on moss, northeast coast of Lake Superior; on moss along Lake Winnipegosis, Man.; on earth at Morley and on moss at Banff, Rocky Mountains; on bases of trees at Revelstoke, Columbia River, B.C. (*Macoun.*)

378. **B. verecundula**, (TH. FR.) TUCKERM.

Upon mosses, Grinnell Land, Arctic America. (*Th. Fries.*)

379. **B. artyta**, (ACH.) TUCKERM.

On earth in high northern regions. (*Tuckerman.*) On the ground, Goose Arm, Newfoundland. (*Waghorne.*) On earth on rocks, Lake Nipigon; on earth at Hector and Cathedral Mountain, Rocky Mountains. (*Macoun.*) Islands of Behring Strait. (*Wright.*)

380. **B. milliaria**, (FR.) TUCKERM.

On bark of old trees, Frenchman's Cove, Newfoundland. (*Waghorne.*) On earth in woods at Banff, July 11th, 1891; also on earth along Jumping Pound Creek, Rocky Mountains, June, 1897. (*Macoun.*) Shumigan group of islands, Alaska. (*Rothrock.*)

381. **B. melæna**, (NYL.) TUCKERM.

On bark of old logs, St. John's beach, Newfoundland. (*Waghorne.*) On old and charred cedar rails along the Richmond road near Ottawa, Ont., April 18th, 1896. (*Macoun.*)

382. **B. castanea**, HEPP.

Clearwater Lake, Labrador, July, 1896. (*A. P. Low.*) Greenland. (*Arct. Man.*) On earth at Morley, Bow River Pass, June

15th, 1885; and on earth, Moose Mountain, Rocky Mountains, July, 1897; on rocks at Deer Park, Columbia River, B.C. June, 1890. (*Macoun.*)

383. **B. rubella**, (EHRH.) RABENH.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) Upon bark, Arctic America. (*Richardson.*) On bark of maple, basswood, beech, white cedar and blue beech at Ottawa, Ont.; on blue beech at Aylmer, Que.; white cedar, Seymour West, Northumberland Co., Ont.; common on bark, Algonquin Park, Ont., June, 1900; on bark at Niagara Falls, May, 1901. (*Macoun.*) On trees at London, Ont. (*A. T. Drummond.*)

384. **B. fusco-rubella**, (HOFFM.) TUCKERM.

On maple and ash bark at Ottawa, Ont.; on white pine at Belleville, Hastings Co., Ont.; on blue beech, Central Ontario Junction Hastings Co., Ont.; and maple trees, Foster's flats, Niagara Falls, May, 1901. (*Macoun.*)

385. **B. suffusa**, FR.

On trees, London, Ont. (*A. T. Drummond.*) On elm bark, Edmonton, Ont. (*J. White.*) On maple, ash and basswood bark at Ottawa, Ont.; on maple bark at Belleville, Hastings Co., Ont.; on bark of trees, Algonquin Park, Ont., June, 1900. (*Macoun.*)

386. **B. Schweinitzii**, FR.

On trees, London, Ont. (*A. T. Drummond.*) On beech, cedar and spruce trees at Ottawa, Ont.; on maple and swamp ash bark at Belleville, Hastings Co.; on *Thuja occidentalis* bark, Algonquin Park, Ont., June, 1900; on cedar bark, Foster's flats, and on maple above Niagara Falls, Ont., May, 1901. (*Macoun.*)

387. **B. atrogrisea**, (DELIS.) HEPP.

On balsam trees at Brackley Point, Prince Edward Island; on bark of *Rhamnus Purshiana* at Comox, Vancouver Island, June 19th, 1893; on bark of small maples at Revelstoke, B.C. (*Macoun.*)

388. **B. inundata**, FR.

On rocks, Ballantyne Cove, Newfoundland. (*Waghorne.*)

389. **B. Friesiana**, HEPP.

On pieces of wood, Wild Cove, Newfoundland. (*Waghorne.*)

390. **B. effusa**, (SMITH) HEPP. var. **arceutina**, ACH.

On the bark of *Alnus rubra* at Comox, Vancouver Island, June 19th, 1893. (*Macoun.*)

391. **B. Beckhausii**, (KOERB.)

On old fence-rails west of the old toll-gate, Aylmer road, Hull, Que., Oct. 6th, 1898. (*Macoun.*)

392. **B. akompsa**, TUCKERM.

On *Ribes bracteosum* at Comox, Vancouver Island, June 19th, 1893. (*Macoun.*)

393. **B. muscorum**, (SW.) TUCKERM.

Greenland. (*Arct. Man.*) On earth, northeast coast of Newfoundland. (*Waghorne.*) Islands of Behring Strait. (*Wright.*)

394. **B. umbrina**, (ACH.) TUCKERM.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

395. **B. rupestris**, SCOP.

On stone, Middle Arm and Coal River, Newfoundland. (*Waghorne.*)

396. **B. chlorantha**, TUCKERM.

On the bark of white pine and spruce, North Bay, Lake Nipissing, May 31st, 1884; on bark of balsam fir, Algonquin Park, Ont., June, 1900. (*Macoun.*)

397. **B. moriformis**, (ACH.) TUCKERM.

On bark and dead wood, Lake Manitoba, and Lake Winnipegosis, Man., July 2nd, 1881. (*Macoun.*)

398. **B. funerea**, (SOMMERF.)

Urophora funerea (Sommerf.) Arn.

On rocks, Shoal Point and Rope Cove, Newfoundland. (*Waghorne*.)

399. **B. obscurella**, SOMMERF.

On bark at Siles Point and Little Harbour, Newfoundland. (*Waghorne*.)

400. **B. obscurata**, (SOMMERF.) ECKFELDT.

Greenland. (*Arct. Man.*) On rotten wood, Chimney Cove, Newfoundland. (*Waghorne*.)

401. **B. campestris**, FR.

On earth amongst moss, at Salt Lake, Anticosti, Que., Aug. 10th, 1883. (*Macoun*.)

402. **B. fuliginea**, ACH.

On bark of dead wood, Wood's Island, Newfoundland. (*Waghorne*.)

403. **B. Macounii**, ECKFELDT.

On granite boulders in Rockcliffe Park, Ottawa, Ont, and in woods west of Hull, Que., April 17th, 1898. (*Macoun*.)

404. **B. holomicra**, ANZ.

On pieces of dead wood at Meadows, Newfoundland. (*Waghorne*.)

405. **B. atrofusca**, FLOT.

On moss and dead bark, Frenchman's Cove, Newfoundland. (*Waghorne*.)

406. **B. pallida**, (ARN.) ECKFELDT.

Greenland. (*Arct. Man.*) On smooth bark, Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.)

407. **B. cæsi-rufa**, (ACH.) ECKFELDT.

On smooth bark, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

37. **HETEROTHECIUM**, Flot.408. **H. sanguinarium**, (LINN.) FLOT.

On bark, Clearwater Lake, Labrador, July 21st, 1896. (*A. P. Low.*) On bark at Coal River and Wild Cove, Newfoundland. (*Waghorne.*) On dead wood, Canaan Forks, Queen's Co., N.B. (*J. Moser.*) On pine bark, Tobique River, N.B. (*G. U. Hay.*) On trunks, dead wood, rocks and mosses, Tadousac, Que. (*A. T. Drummond.*) On various trees at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; on spruce bark, Jupiter River, Anticosti, Que.; on spruce trees, Mount Albert, Gaspé Co., Que.; on bark of various trees and on rocks, Lake Nipigon; on bark of spruce trees, Current River, Thunder Bay, Lake Superior; on moss on rocks at Hector, Rocky Mountains. (*No. 510, Eckfeldt.*) On trees, Union Mines, near Comox, and near Victoria, Vancouver Island. (*Macoun.*) St. Paul and St. George islands, Behring Sea. (*J. M. Macoun.*)

409. **H. grossum**, (PERS.) TUCKERM.

On bark of dead wood, Wild Cove and Coal River, Newfoundland. (*Waghorne.*) On red cedar, Island of Grand Manan, N.B. (*Willey.*) On spruce trees along Jupiter River, Anticosti, Que.; on ash trees at the mouth of the Madeline River, Gaspé Co., Que.; on black ash trees at Baddeck, Cape Breton Island, N.S., July 9th, 1898. (*Macoun.*)

410. **H. pezizoideum**, (ACH.) FLOT.

Greenland. (*Stizenberger.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On spruce trees, Jupiter River, Anticosti, Que.; on bark of balsam fir at Truro, N.S.; on moss on the bases of trees at Carleton Place, Ont.; on earth and moss, Moose Mountain, Rocky Mountains, Alta, July, 1897, alt. 6,000 feet. (*Macoun.*) On mosses, islands of Behring Strait. (*Wright.*)

411. **H. fuscoluteum**, DICKS.

On rocks on earth, Unalaska Island, Behring Sea, June 4th. 1897. (*J. M. Macoun.*)

412. **H. alpinum**, ACH.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

413. **H. porphyrites**, TUCKERM.

On bark of trees, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

414. **H. leucoxanthum**, (SPRENG) MASS.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

38. **LECIDEA**, (ACH.) TUCKERM.415. **L. candida**, (WEB.) ACH.

Upon earth in the extreme north.

Arctic America. (*Richardson.*) Greenland. (*Vahl.*) On rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C. (*Macoun.*)

416. **L. cæruleo-nigricans**, (LIGHTF.) SCHÆR.

On earth along the River St. Lawrence, Lat, 48°. (*Pringle.*)
On earth on Moose Mountain, Rocky Mountains, July 3rd, 1897.
alt. 6,500 feet. (*Macoun.*)

417. **L. cumulata**, SOMMERF.

On the earth in alpine and arctic regions.
Greenland. (*Vahl.*)

418. **L. squalida**, (SCHLEICH.) ACH.

On the earth in alpine and arctic regions.
Greenland. (*Vahl.*)

418a. **L. flavo-virescens**, (DICKS.) BORR.

Parasitic on the thallus of *Bæomyces Byssoides*.
Greenland. (*Arct. Man.*)

419. **L. pruinosa**, (SMITH) FLOT.

On rocks, Middle Greenland. (*Eberlin.*) On rocks, Birchy Cove and Irishtown, Newfoundland. (*Waghorne.*) On rocks along Jumping Pound Creek, Rocky Mountains, June, 1897; on

sandstone rocks, Wood Mountain, Assa., June, 1895; quite common on granite boulders at Ottawa, Ont., and Hull, Que. April, 1897. (*Macoun.*)

420. **L. lapicida**, (ACH.) NYL.

Closely related to *L. pruinosa*.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Greenland. (*Arct. Man.*) On limestone shingle near the Hogsback, by the Rideau River, near Ottawa, Ont., May 7th, 1897; quite common on limestone rocks everywhere around Ottawa; at Wood Mountain, Assa., June, 1895. (*Macoun.*)

421. **L. tessellata**, FLOERKE.

Granitic rocks. Greenland. (*Vahl.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Along the north shore of Lake Superior. (*Agassiz.*) On rocks along the South Saskatchewan River, Assa. (*Macoun.*)

422. **L. tessellina**, TUCKERM.

On various rocks. On boulders at Belleville, Hastings Co., Ont., Sept., 1878; along the Nipigon River, Lake Superior, July, 1884. (*Macoun.*)

423. **L. auriculata**, TH. FR.

Granitic rocks, Greenland. (*Vahl.*) Arctic America. (*Fries.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

424. **L. polycarpa**, FR.

On alpine and arctic rocks.

Labrador. (*Krempelhuber.*) Arctic America. (*Stizenberger.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On rocks, Deer Park, Columbia River, B.C., June, 1890. (*Macoun.*)

425. **L. variegata**, FR.

On rocks, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

426. **L. panæola**, ACH.

On granitic rocks, Greenland. (*Vahl.*) On rocks, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

427. **L. contigua**, FR.

Greenland. (*Arct. Man.*) On rocks, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Granite rocks, along Ste. Anne des Monts River, Gaspé Co., Que.; on limestone rocks at Aylmer, Que., April 25, 1900. (*Macoun.*)

428. **L. speirea**, NYL.

On rocks, north shore of Lake Superior. (*Agassiz.*)

429. **L. confluens**, SCHÆR.

Granitic rocks in alpine and arctic regions.
Greenland. (*Vahl.*) Arctic America. (*Richardson.*)

430. **L. albocærulescens**, (WULF.) SCHÆR.

Granitic and arenaceous rocks.
Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On granitic rocks at Shannonville, Hastings Co., Ont.; on granitic rocks at Margaree, Cape Breton Island, N.S., July, 1898. (*Macoun.*)

Var. **flavocærulescens**, SCHÆR.

On rocks in alpine and arctic regions.
Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On rocks along the Ste. Anne des Monts River, Gaspé Co., Que., Aug. 18th, 1882. (*Macoun.*)

431. **L. atro-brunnea**, (DC.) SCHÆR.

On alpine and arctic granitic rocks.
Greenland. (*Vahl.*)

432. **L. fusco-atra**, (LINN. FR.

Granitic rocks, alpine and arctic, as well as in the lower districts.

Greenland. (*Arct. Man.*) Arctic America. (*Richardson.*) Tadou-sac, St. Lawrence River, Que. (*A. T. Drummond.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

433. **L. tenebrosa**, FLOT.

On rocks, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

434. **L. fuscescens**, SOMMERF.

Greenland. (*Arct. Man.*) On rocks, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

435. **L. Dicksonii**, ACH.

On rocks, Sparrille Cove, Newfoundland. (*Waghorne.*)

436. **L. polygonia**, FLOT.

On rocks, Leading Tickle, Newfoundland. (*Waghorne.*)

437. **L. Armeniaca**, (DC.) FR.

Alpine and arctic granitic rocks,
Greenland. (*Vahl.*)

438. **L. aglæa**, SOMMERF.

Alpine and arctic granitic rocks.
Greenland. (*Vahl.*)

439. **L. amylacea**, ACH.

Alpine rocks, containing lime.
Greenland. (*Vahl.*)

440. **L. enteroleuca**, FR.

On rocks and stones.

On stones, Rope Cove, Bay of Islands and Little Harbour, Newfoundland. (*Waghorne.*) Greenland. (*Arct. Man.*) On small pebbles at Baddeck, Cape Breton Island, N.S., July 29th, 1898; on small stones, summit of Mount Albert, Gaspé Co., Que., 1882; on small pebbles at Ottawa, Ont., April, 1900. (*Macoun.*)

Var. **æquata**, FLÖRKE.

On trap rocks, Grand Manan Island, N.B. *Willey.*

Var. **muscorum**, KOERB.

Chiefly on mosses in alpine and arctic regions.

Islands in Behring Strait. (*Wright*.) On moss at the bases of trees, Salt Lake, Anticosti, Que.; on earth in woods at Banff, Rocky Mountains, 1891. (*Macoun*.)

Var. **achrista**, SOMMERF.

On trees and shrubs.

On bark of trees along Lake Winnipegosis, and on Moose Mountain, Man., July, 1880; on cherry bark at Old Wives' Creek, Assa., May, 1895; on poplar bark along Jumping Pound Creek, Rocky Mountains, June, 1897. (*Macoun*.)

Var. **pilularis**, DC.

On limestone rocks along the Rideau River near the Hogsback, May 7th, 1897; at Aylmer, Que., April, 1900. (*Macoun*.)

441. **L. vorticosa**, KOERB.

On alpine and arctic granitic rocks.

Arctic America. (*Fries*.)

442. **L. pycnocarpa**, KOERB.

Granitic rocks, Island of Grand Manan, N.B. (*Willey*.)

443. **L. arctica**, SOMMERF.

Upon mosses in alpine and arctic regions.

Greenland. (*Vahl*.) Islands in Behring Strait. (*Wright*.)

444. **L. planetica**, TUCKERM. var. **perfecta**, ECKFELDT.

On limestone shingle at Britannia, near Ottawa, Ont., April 20th, 1895. (*Macoun*.)

445. **L. limosa**, ACH.

On naked earth in alpine and arctic regions.

Greenland and Arctic America. (*Fries*.)

446. **L. alpestris**, SOMMERF.

On earth in alpine and arctic regions.
Greenland and Arctic America. (*Fries.*) Greenland. (*Arct. Man.*)

447. **L. assimilata**, NYL.

On earth in alpine and arctic regions.
Islands of Behring Strait. (*Wright.*)

448. **L. melancheima**, TUCKERM.

On dead wood in Canada. (*A. T. Drummond.*)

449. **L. crassipes**, (TH. FR.) NYL.

Upon mosses in alpine and arctic regions.
Arctic America. (*Th. Fries.*)

450. **L. Morio**, SCHÆR. var. **covacina**, SCHÆR.

On alpine and arctic rocks.
Arctic America. (*Dr. Kane.*)

451. **L. aromatica**, (SWARTZ.) ACH.

On rocks, Lake Nipigon, Ont., July 9th, 1884. (*Macoun.*) This species was named by Tuckerman and belongs to the section *Toninia*.

452. **L. crenulata**, (DICKS.) ECKFELDT.

On rocks, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

453. **L. crustulata**, ACH.

On rocks, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

454. **L. distans**, ECKFELDT.

On rocks, Labrador. (*Waghorne fide Eckfeldt.*)

455. **L. empetrea**, NYL.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

456. **L. latypea**, ACH.

On rocks, Chimney Cove, Newfoundland. (*Waghorne.*)

457. **L. Kochiana**, HEPP.

On rocks, Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.)

458. **L. dispansa**, NYL.

On rocks, Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.)

459. **L. sylvicola**, (FLOT.) NYL.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.)

460. **L. conferenda**, (NYL.) ECKFELDT.

On rocks, Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.)

461. **L. contracta**, TH. FR.

On rocks, Chimney Cove, Newfoundland. (*Waghorne*.)

462. **L. plana**, LAHM.

On rocks, Clark's Brook and Bay of Islands, Newfoundland. (*Waghorne*.)

463. **L. solediza**, NYL.

On stones, Lark Harbour, Shoal Point and Ballantyne Cove, Newfoundland. (*Waghorne*.)

464. **L. viridans**, FLOT.

On stones, Lark Harbour, Newfoundland. (*Waghorne*.)

465. **L. parasema**, ACH.

On bark of trees, Wild Cove, Newfoundland. (*Waghorne*.)

466. **L. (Biatorina) synothea**, ACH.

On old boards, Birchy Cove, Newfoundland. (*Waghorne*.)

467. **L. fusco-rubens**, NYL.

Greenland, (*Dr. Brown in Arct. Man.*)

468. **L. Discoensis**, LINDS.

Greenland, (*Dr. Brown in Arct. Man.*)

469. **L. Campsteriana**, LINDS.

Greenland. (*Dr. Brown in Arct. Man.*)

470. **L. Friesiana**, LINDS.

Greenland. (*Arct. Man.*)

471. **L. Egedeana**, LINDS.

Greenland. (*Dr. Brown in Arct. Man.*)

472. **L. subfuscula**, NYL.

Greenland. (*Arct. Man.*)

39. **SCOLICIOSPORUM.**473. **S. psotinum**, (FR.) TH. FR.

On stones, Little Harbour, and on bark, St. John's Beach, Newfoundland. (*Waghorne.*)

40. **BUELLIA**, De Not., Tuck.474. **B. pulchella**, (SCHRAD.) TUCKERM.

Moist, shaded, alpine, and arctic rocks.
Arctic America. (*Richardson.*)

475. **B. ———**, N. SP.

This species remains unnamed by Mr. Branth, who put it in the first section of the genus — *Catolechia*. On earth along Old Wives' Creek, Assa., May 23rd, 1895. (*Macoun.*)

476. **B. albo-atra**, (HOFFM.) TH. FR.

On trunks, in Canada. (*A. T. Drummond.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Unalaska Island. (*Rothrock.*)

Var. **saxicola**, FR.

On boulders, "elbow" of South Saskatchewan River, Assa., July 13th, 1879. (*Macoun.*)

477. **B. spuria**, (SCHÆR.) ARN.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On limestone rocks in woods at Hull, Que., April 24th, 1897. (*Macoun.*)

478. **B. lepidastra**, TUCKERM.

On limestone rocks west of Hull, Que., April 24th, 1897 ; on boulders near the "elbow" of the South Saskatchewan River. Asa., Aug., 1879. (*Macoun.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

479. **B. parasema**, (ACH.) TH. FR.

Bark of trees and on dead wood ; common.

Greenland. (*Arct. Man.*) Arctic America. (*Richardson.*) On dead wood, Chimney Cove, Newfoundland. (*Waghorne.*) On bark, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On bark of various trees and dead wood in many places, Cape Breton Island, N. S., July, 1898 ; on bark of trees at Halifax, N. S. ; at Salt Lake, Anticosti, Que. ; on bark and dead wood, Gaspé Co., Que. ; on old rails at Port Daniels, Bay of Chaleurs, Que. ; abundant on fence-rails and young pines around Ottawa, Ont. ; on dead wood and old rails at Belleville, Hastings Co., Ont. ; on fence-rails near Wooler, Northumberland Co., Ont. ; on trees, Algonquin Park, Ont., June, 1900 ; on birch bark, Lake Nipigon ; on bark of paper birch, Red Deer River, Porcupine Mountains, Man. ; on dead wood, Jumping Pound Creek, Rocky Mountains ; on old logs near C. P. R. station at Banff, Rocky Mountains. (*Macoun.*) Port Clarence, Alaska. (*Rothrock.*)

Var. **triphragmia**, NYL.

On *Alnus rubra*, by the sea at Comox, and on Sea's farm near Victoria, Vancouver Island, June 20th, 1893. (*Macoun.*)

480. **B. papillata**, (SOMMERF.) TUCKERM.

Upon dead mosses, etc., in alpine and arctic regions.

Greenland. (*Vahl.*) On moss in woods at Banff ; and on moss along Jumping Pound Creek, Rocky Mountains, June, 1897. (*Macoun.*)

Var. **albo-cincta**, TH. FR.

Islands of Behring Strait. (*Wright.*)

481. **B. myriocarpa**, (DC.) MUDD.

On trees and shrubs ; common on dead wood and stones.

Greenland. (*Vahl.*) Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) On old boards, Main Station, Sable Island, N.S., July, 1899 ; on old rails at Margaree, Cape Breton Island, N.S., July, 1898 ; on dead trees along the Gaspé coast, Gaspé Co., Que. ; quite common on cedar and pine rails at Ottawa, Ont. ; common on cedar rails at Wooler, Ont. ; on dead pine at Banff, Rocky Mountains ; on old boards along the wharf at Comox, Vancouver Island. (*Macoun.*) Port Clarence, Alaska. (*Rothrock.*)

482. **B. Schæreri**, DE NOT.

On old rails at Wooler, Northumberland Co., Ont., Oct. 14th, 1893. (*Macoun.*)

483. **B. capitulata**, TH. FR., var. **erubescens**, FLOT.

On smooth rocks, Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*)

484. **B. punctiformis**, (HOFFM.) ECKFELDT.

On dead wood, Chimney Cove, and Little Harbour, Newfoundland. (*Waghorne.*)

485. **B. disciformis**, FR.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*) Greenland. (*Arct. Man.*)

486. **B. atrata**, (SOMMERF.) ECKFELDT.

On rocks, Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*)

487. **B. coracina**, (HOFFM.) TH. FR.

On alpine and arctic rocks.

Arctic America. (*Dr. Kane.*)

488. **B. oidalea**, TUCKERM.

On bark of Douglas fir on Sea's farm near Victoria, and also at Comox, Vancouver Island. (*Macoun.*)

489. **B. Rittkensis**, HELLB.

On rocks, Cape York, Arctic America. (*Th. Fries.*)

490. **B. colludens**, NYL. (TUCKERM.)

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On rocks along the St. Lawrence below Quebec. (*A. T. Drummond.*) Chamisso Island, Arctic Ocean. (*Rothrock.*)

491. **B. excentrica**, (NYL.) ECKFELDT.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

492. **B. badio-atra**, (SCHÆR.) KOERB.

Rocks in alpine and arctic regions.

Greenland. (*Vahl.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On rocks, Deer Park, Columbia River, B.C., June 7th, 1890. (*Macoun.*)

493. **B. petræa**, (FLOT.) TUCKERM.

Common on rocks and dead wood.

Greenland. (*Vahl.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On rocks along the St. Lawrence below Quebec. (*A. T. Drummond.*) On granite boulders in Rockcliffe Park, Ottawa, Ont.; at Belleville and Shannonville, Hastings Co., Ont.; at Lake Nipigon, Ont. (*Macoun.*) St. Paul Island, Kadiak Is'and and Port Clarence, Alaska. (*Rothrock*)

Var. **Montagnæi**, TUCKERM.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On granite boulders "elbow" of South Saskatchewan River, Assa., July 13th, 1879. (*Macoun.*) St. Paul Island and Unalaska Island, Cook's Inlet and Port Clarence, Alaska. (*Rothrock.*)

Var. **grandis**, FLØRKE.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On granite boulders in Rockcliffe Park, Ottawa, Ont., April 22nd, 1897. (*Macoun.*)

494. **B. empetræa**, NYL.

On rocks and stones, Labrador or Newfoundland. (*Waghorne.*)

495. **B. conioisoideum**, (HEPP) ECKFELDT.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

496. **B. Oederi**, (ACH.) BR. & ROSTR.

Alpine and arctic rocks. Greenland. (*Vahl.*)

497. **B. geographica**, LINN.) TUCKERM.

On rocks in alpine and arctic regions.

Greenland. (*Arct. Man.*) Arctic America. (*Richardson.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Newfoundland. (*Pylaie.*) On rocks, Tadousac, Que. (*A. T. Drummond.*) On sandstone ridges, Wood Mountain, Assa., June, 1895; on rocks in the Crow's Nest Pass, Aug. 20, 1897; quite common on all the higher Rocky Mountains. (*Macoun.*) Aliaska Peninsula, Alaska. (*Rothrock.*)

Var. **lecanorina**, FLÖRKE.

On rocks, Island of Grand Manan, New Brunswick. (*Willey.*)

498. **B. alpicola**, (WAHL.) ANZ.

On alpine and arctic rocks. Arctic America. (*Th. Fries.*)

499. **B. scabrosa**. (ACH.) KOERB.

On *Bæomyces* in alpine and arctic regions.

Greenland. (*Vahl.*) Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

500. **B. Parmeliarum**, (SOMMERF.) TUCKERM.

Upon the thallus of species of *Parmelia* and *Cetraria*.

On *Cetraria Fahlunensis*, Islands of Behring Strait. (*Wright.*) On *Parmelia olivacea*, Leading Tickle, Newfoundland. (*Waghorne.*)

501. **B. saxatilis**, (SCHÆR.) KOERB.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

502. **B. urceolata**, TH. FR.

Upon the thallus of various lichens. Greenland. (*Vahl.*)

503. **B. parasitula**, NYL.

Found on *Pilophorus cereolus*, var. *robustus*, on the islands in Behring Strait. (*Wright.*)

504. **B. glaucomaria**, (NYL.) TUCKERM.

On the thallus of *Lecanora glaucoma*, Greenland. (*Stitzenberger.*)

505. **B. Pertusaricola**, WILLEY.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On the thallus of a *Pertusaria*, on poplar trees at Ottawa, Ont., Oct. 16th, 1889. (*Macoun.*)

506. **B. obscurata**, (ACH.) ECKFELDT.

On rocks, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Quite common on limestone and other rocks around Ottawa, Ont., and at Aylmer, Que., 1900. (*Macoun.*)

507. **B. rivularis**, (FLOT.) ECKFELDT.

On rocks, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

508. **B. Copelandi**, (KOERB.) ECKFELDT.

On rocks, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

509. **B. concreta**, (KOERB.) ECKFELDT.

On rocks, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

510. **B. calcarea**, (WEIS.) ECKFELDT.

On rocks, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

511. **B. rubescens**, (ARN.) ECKFELDT.

On smooth bark, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

512. **B. verruculosa**, BON.

On stones, Chimney Cove, Newfoundland. (*Waghorne.*)

513. **B. reductum**, TH. FR.

On stones, Birchy Cove and Summerside, Newfoundland. (*Waghorne.*)

514. **B. (Rhizocarpon) empetræum**, NYL.

On rocks, Labrador, 1896; on rocks, Lark Harbour, Newfoundland. (*Waghorne.*)

41. **LECANACTIS**, (Eschw.) Koerb.515. **L. abietina**, (ACH.) KOERB.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On trunks of spruce, Arctic America, between Lat. 54° and 64° N. (*Richardson.*)

516. **L. premnea**, ACH. var. **chloroconia**, TUCKERM.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On white spruce bark, Swan Lake House, Lake Winnipegosis, Man., July 6th, 1881. (*Macoun.*)

42. **OPEGRAPHA**, Humboldt.517. **O. varia**, (PERS.) FR.

On birch bark, Frenchman's Cove, Newfoundland. (*Waghorne.*) On bark of butternut trees at Ottawa, Ont.; on bark of white cedar and spruce trees, Lake Nipigon, Ont. (*Macoun.*)

518. **O. vulgata**, ACH.

On bark of conifers, Half Way Point, Newfoundland. (*Waghorne.*) On bark of *Alnus rubra*, by the sea, at Comox, Vancouver Island, June 20th 1893; on ash bark near the Rideau River, at the Hogsback, near Ottawa, Ont., and at Leamy's Lake, near Hull, Que., May 7th, 1897. (*Macoun.*)

519. **O. zonata**, KOERB.

On rocks, Lark Harbour, Newfoundland. (*Waghorne.*)

520. **O. atra**, ACH.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

521. **O. saxicola**, ACH.

On sandstone rocks, Goose Arm, Newfoundland. (*Waghorne.*)

43. **XYLOGRAPHA**, Fries.522. **X. parallela**, (ACH.) FR.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On old fence rails at Margaree, Cape Breton Island, N.S., July, 1898; on

old fences, Main Station, Sable Island, N.S., July, 1899; on dead wood in northern British Columbia. (*Macoun.*) Islands in Cross Sound, Alaska. (*Rothrock.*)

523. **X. Opegraphella**, NYL.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

On dead wood on the island of Grand Manan, New Brunswick. (*Willey.*) On old logs on the sea beach, Gaspé coast, Gaspé Co., Que.; on old rails at Margaree, Cape Breton Island, N.S., July, 1898. (*Macoun.*) Cook's Inlet, Alaska. (*Rothrock.*)

44. **GRAPHIS**, Ach.

524. **G. scripta**, Ach., var. **limitata**, Schær.

Quite common on bark of various trees.

On bark at Frenchman's Cove; also under various forms in other localities, Newfoundland. (*Waghorne.*) On bark, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) On alder bark at Baddeck, Cape Breton Island, N.S., 1898; on trees, Gaspé Co., Que.; very common on bark of hickory, maple, birch, basswood and ironwood at Ottawa, Ont.; on beech trunks, common, at Belleville, Hastings Co., Ont.; on beech trees, Seymour West, Northumberland Co., Ont.; on spruce bark, North Bay, Lake Nipissing, Ont.; on young alders, Algonquin Park, Ont., 1900; on bark along Lake Winnipegosis, Man.; on birch bark at Hastings, Burrard Inlet, B.C.; on poplar and Douglas fir near Victoria, and on bark at Comox, Vancouver Island. (*Macoun.*)

Var. **recta**, Schær.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On bark of canoe birch at Salt Lake, Anticosti, Que.; along the Ste. Anne des Monts River, Gaspé Co., Que.; on bark of canoe birch at Baddeck and Margaree, Cape Breton Island, N.S., 1898; in woods at Hull, Que.; on birch trees Algonquin Park, Ont, June, 1900. (*Macoun.*)

Var. **serpentina**, Ach.

On pine bark at Belleville, Hastings Co., Ont.; and on bark of *Juglans cinerea* west of Hull, Que., April 24th, 1897; on *Rhamnus Purshiana* at Comox, Vancouver Island. (*Macoun.*)

45. **ARTHONIA**, Ach.525. **A. patellulata**, NYL.

On trees, Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) On aspen poplar trees, Moose Mountain, Man., July 3rd, 1880. (*Macoun*.)

526. **A. astroidea**, Ach.

On bark of trees, common.

Bay of Exploits, Newfoundland. (*Waghorne*.) Abundant on trees around Ottawa, Ont., and at Hull and Aylmer, Que.; quite common at Belleville, Hastings Co., Ont.; on balsam fir at King's Mountain, Chelsea, Que., 1897. (*Macoun*.)

527. **A. Swartziana**, Ach.

Frequent on bark of trees along St. Mary's River, Anticosti, Que.; on trees at Cove Head, Prince Edward Island, 1888; at Shannonville, Hastings Co., Ont.; on balsam fir, Lake Winnipegosis, Man.; on ash and maple trees at Leamy's Lake, Hull, Que., 1897. (*Macoun*.)

528. **A. medilla**, NYL.

On dead wood, Greenland. (*Vahl*.)

529. **A. spectabilis**, Flot.

Quite common on old thick bark of various trees.

Bay of Exploits, Newfoundland. (*Waghorne*.) On maple trees at Ottawa, Ont.; on bitter-nut hickory at Hull and on basswood at Aylmer, Que.; on basswood at Carleton Place, Ont.; on ash trees, Central Ontario Junction and basswood and other trees at Belleville, Hastings Co., Ont.; on maple trees, Port Colborne and Canfield Junction, southwestern Ontario. (*Macoun*.)

530. **A. radiata**, (Pers.) Th. Fr.

On bark at Hastings, Burrard Inlet, B. C., 1887; on *Alnus rubra* at Comox, Vancouver Island, June 23rd, 1893. (*Macoun*.)

531. **A. lecideella**, NYL.

Chiefly on the bark of young *Pinus Strobus* at Ottawa, Ont.; on *Acer spicatum* at Aylmer, Que.; on pine, ash and basswood at

Belleville, Hastings Co., Ont.; on young pines and poplars at Wooler, Ont. (*Macoun.*)

532. **A. dispersa**, (SCHRAD.) NYL.

On bark, Irishtown, Newfoundland. (*Waghorne.*) On bark of young maples at Ottawa, Ont., April 16th, 1892, and on maple bark near Leamy's Lake, Hull, Que., 1897. (*Macoun.*)

533. **A. tædiosa**, NYL.

On young beech and maples at Buckingham, Que., May 14th, 1896. (*Macoun.*)

534. **A. populina**, MASS.

On poplar bark at Grand Lake and Lark Harbour, Newfoundland. (*Waghorne.*)

535. **A. raunidia**, NYL.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

46. **MYCOPORUM**, NYL.

536. **M. pycnocarpum**, NYL.

On bark of oak trees at Aylmer, Que.; abundant on young trees of *Acer rubrum* in a swamp above the Central Ontario Junction, Hastings Co., Ont. (*Macoun.*)

47. **SIPHULA**, Fries.

537. **S. ceratites**, NYL.

Clearwater Lake, northern Labrador, July 21st, 1896. (*A. P. Low.*) This occurs on islands in Behring Strait. (*Wright.*) On Attu Island, Behring Sea, Aug. 29th, 1901. (*J. M. Macoun.*)

48. **SPHÆROPHORUS**, Pers.

538. **S. globiferous**, (LINN.) DC.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Arctic America. (*Herb. Hooker.*) On earth in bogs, Salt Lake, Anticosti, Que.; on trees in bogs and on rocks at Truro, N.S.; on rocks, summit of Mount Albert, Gaspé Co., Que.; on trees at Hastings, Burrard Inlet, B.C.; on trees at Nanaimo, Vancouver

Island. (*Macoun.*) On rotten logs, Johnson's Strait and Thurlow Island, Gulf of Georgia, B.C. (*Dr. G. M. Dawson.*) St. Paul and St. George islands, Behring Sea; Port Etches, Alaska, and Carmanah Point, Vancouver Island. (*J. M. Macoun.*) Loring; also at Salmon Creek, Juneau, Alaska. (*Miss G. Cooley.*) St. Matthew Island, Port Mulgrave, and on the Shumagin Group, Alaska. (*Rothrock.*)

539. **S. compressum**, ACH.

Rocks and on earth in alpine districts.

Arctic America. (*Richardson.*) On rocks, Cape Chudleigh, Digge's Island and Cape Prince of Wales, Hudson Strait. (*Dr. R. Bell.*) On trees Burnside Road, Victoria, Vancouver Island. (*Macoun.*)

540. **S. fragile**, (LINN.) PERS.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Northward to Arctic America. (*Hooker.*) On rocks St. Paul Island, Behring Sea, June 28th, 1897. (*J. M. Macoun.*) On earth at the forks of Old Wives' Creek, Assa., June 1st, 1895. (*Macoun.*)

49. **ACOLIUM**, De Not.

541. **A. tigillare**, DE NOT.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Arctic America. (*Richardson.*)

542. **A. tympanellum**, (ACH.) DE NOT.

On the old wharf at Hastings, Burrard Inlet, B.C., April 16th, 1889; and on old wharf at Comox, Vancouver Island, June, 1893. (*Macoun.*)

50. **CALICIUM**, De Not.

543. **C. phæocephalum**, (TURN.) TURN. & BARR.

On bark of trees, Canada. (*A. T. Drummond.*) On bark of dead spruce, Hector, Rocky Mountains; on bark of Douglas Fir, Comox, Vancouver Island. (*Macoun.*)

544. **C. lenticulare**, (HOFFM.) ACH.

On decaying wood in Canada. (*A. T. Drummond.*)

545. **C. subtile**, FR.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) On dead wood, Arctic America. (*Richardson*.) On rotten wood, Bass River, Kent Co., N.B. (*Prof. Fowler*.) On dead wood at Ottawa, Ont. (*Macoun*.) On bark at Laggan, Rocky Mountains. (*Bean*.)

546. **C. fuscipes**, TUCKERM.

On dead wood, London, Ont. (*A. T. Drummond*.)

547. **C. trichiale**, ACH.

On dead spruce logs, Gaspé coast, Que. ; on dead cedar logs, Nipigon River, Ont. (*Macoun*.)

548. **C. roscidum**, FLÖRKE.

On dead wood, Arctic America. (*Richardson*.)

549. **C. turbinatum**, PERS.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) Parasitical on *Pertusaria*; Canada. (*A. T. Drummond*.) On the slopes of Mount Albert, Gaspé Co., Que. (*Macoun*.)

550. **C. hyprellum**, ACH.

On the inner bark of conifers, Halfway Point, Newfoundland. (*Waghorne*.) On bark of Douglas fir, on Sea's farm, near Victoria, Vancouver Island, May 6th, 1893. (*Macoun*.)

551. **C. trabinellum**, SCHL.

On dead wood, Halfway Point, Newfoundland. (*Waghorne*.)

552. **C. salicinum**, PERS.

On dead wood, Siles Point, Halfway Point, Birchy Cove and on bark at Deer Lake, Newfoundland. (*Waghorne*.)

553. **C. minutum**, KOERB.

On old boards at Goose Arm, and on boards and dead wood at Ballantyne Cove, Newfoundland. (*Waghorne*.)

554. **C. pusillum**, FLÆRKE.

On dead wood, St. John's Beach, Newfoundland. (*Waghorne*.)
On old rails near Aylmer, Que., May 22nd, 1897. (*Macoun*.)

555. **C. parietinum**, ACH.

On mossy wood Sandy Point, Bay of St. George and Siles Point, Newfoundland. (*Waghorne*.)

51. **CONIOCYBE**, Ach.556. **C. furfuracea**, (LINN.) ACH.

On stems of plants, Birchy Cove, and Middle Arm, and on stones, Ballantyne Cove, Newfoundland. (*Waghorne*.) On the roots of trees, chiefly pine, in the shade at Dow's swamp, near Ottawa, Ont., and on pine roots at Ironsides, Que.; on old stumps in Algonquin Park, Ont., June, 1900. (*Macoun*.)

52. **ENDOCARPON**, Hedw.557. **E. miniatum**, (LINN.) SCHÆR.

On limestone and other rocks.

Shoal Point and Halfway Point, Newfoundland. (*Waghorne*.)
Greenland. (*Arct. Man.*) Arctic America. (*Richardson*.) On rocks, Hastings Co., Ont.; on rocks, Bow River Pass, Rocky Mountains; on rocks at Yale, B.C.; on rocks, by the sea, Victoria Arm, Victoria, Vancouver Island. (*Macoun*.)

Var. **complicatum**, SCHÆR.

On rocks mostly near water.

Greenland. (*Vahl*.) Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) On rocks along the Ste. Anne des Monts River, Gaspè Co., Que.; on rocks, Lake Nipigon, at Thunder Bay, Lake Superior, and at Savanne, west of Lake Superior; at Deer Park, Lower Arrow Lake, Columbia River, B.C. (*Macoun*.) On rocks, Pearse Island, Gulf of Georgia, 1885. (*Dr. G. M. Dawson*.)

Var. **fulvofuscum**, TUCKERM.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.)

558. **E. fluviatile**, DC.

On rocks in streams, generally covered by water.

On stones in a brook, Canaan Forks, Queen's Co., N.B. (*J. Moser*.) On rocks in a brook at Margaree and Halfway Brook, Cape Breton Island, N.S., 1898; on rocks in a mountain brook, Meech's Lake, near Chelsea, Que.; at Hull, Que. and on the cliffs, Rockcliffe, Ottawa, Ont.; on rocks, Old Man River, Crow's Nest Lake, Rocky Mountains, Alta., 1897; on stones in water. Cache Lake, Algonquin Park, Ont., June, 1900. (*Macoun*.)

559. **E. hepaticum**, Ach.

On earth in Greenland. (*Vahl*.) On earth, Hastings Co., Ont.; on earth, "elbow" of South Saskatchewan, Assa., July 13th, 1879. (*Macoun*.)

560. **E. rufescens**, Ach.

On earth, Greenland. (*Vahl*.)

561. **E. cinereum**, Pers.

On earth, Bay of Exploits, Newfoundland. (*Waghorne* fide *Eckfeldt*.) St. Paul's Island, Behring Sea, Alaska. (*Rothrock*.)

53. **STAUROTHELE**, Norm.562. **S. Drummondii**, Tuckerm.

On Trenton limestone, at Kingston, Ont. (*A. T. Drummond*.)

563. **S. umbrina**, (Wahl.) Tuckerm.

Greenland. (*Arct. Man*.) On limestone rocks, Kingston, Ont. (*A. T. Drummond*.)

54. **SEGESTRIA**, Fries.564. **S. majusculum**, Nyl.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.)

55. **TRYPETHELIUM**, Spreng.565. **T. virens**, Tuckerm.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) On trees in Canada. (*A. T. Drummond*.) At Big Intervale, Margaree,

Cape Breton Island, N. S., 1898; on beech trees at Beechwood and Casselman, near Ottawa, Ont.; near Wooler and at Belleville, Ont. (*Macoun.*) On bark, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*)

56. **SAGEDIA**, Mass.566. **S. Cestrensis**, TUCKERM.

On bark of maples, Margaree, Cape Breton Island, N.S., July, 1898; on young maples at Ottawa, Ont., May, 1892; on King's Mountain, Chelsea, Que., May, 1897. (*Macoun.*)

567. **S. oxyspora**, (NYL.) TUCKERM.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

568. **S. carpinea**, PERS.

On bark, St. John's Beach, Newfoundland. (*Waghorne.*)

57. **VERRUCARIA**, Pers,569. **V. epigæa**, (PERS.) ACH.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) On earth along the Gaspé coast, Que., Aug. 11th, 1882. (*Macoun.*)

570. **V. maura**, (WAHL.) NYL.

On granitic rocks by the sea shore.

Greenland. (*Vahl.*) On rocks, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*) Fort Alexander, Cook's Inlet, Alaska. (*Rothrock.*)

571. **V. centhocarpa**, WAHL.

On granite rocks often wet by the sea.

Greenland. (*Vahl.*) Fort Alexander with the above species. (*Rothrock.*)

572. **V. nigrescens**, PERS.

On limestone rocks, Canada. (*A. T. Drummond.*)

573. **V. intercedens**, NYL.Cape Lisburne, Alaska. (*Rothrock.*)574. **V. intermedia**, (TH. FR.) WILLEY.Cape Lisburne, Alaska. (*Rothrock.*)575. **V. rupestris**, SCHRAD.

On rocks St. John's Beach, Newfoundland. (*Waghorne.*) On limestone rocks, Kingston, Ont. (*A. T. Drummond.*) On limestone cliffs, Rockcliffe, Ottawa, Ont., Nov. 11th, 1896. (*Macoun.*)

576. **V. nigricola**, ARNOLD.On bark, Middle Arm, Newfoundland. (*Waghorne.*)577. **V. theliodes**, SOMMERF.Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*)578. **V. Nylanderi**, HEPP.On limestone rocks, Kingston, Ont. (*A. T. Drummond.*)579. **V. microloba**, TUCKERM.On limestone rocks, Kingston, Ont. (*A. T. Drummond.*)580. **V. terrestris**, TH. FR.Behring Strait. (*Wright.*)581. **V. Nepigona**, TUCKERM.

On the surface of peat on rocks, Lake Nipigon, July 10th, 1884. (*Macoun.*)

582. **V. bryophila**, LORMR.Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*)583. **V. rimosicola**, LEIGHT.

Parasitic on *Buellia excentricum*, Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt.*)

584. **V. amylacea**, HEPP.On limestone rocks, Goose Arm, Newfoundland. (*Waghorne.*)

585. **V. chlorotica**, ACH.

On stones, Goose Arm, and Lark Harbour, Newfoundland.
(*Waghorne*.)

586. **V. pachyderma**, ARNOLD.

On rocks, Lark Harbour, Newfoundland. (*Waghorne*.)

587. **V. aquatilis**, MUDD.

On stones, Goose Arm, Newfoundland. (*Waghorne*.)

588. **V. papillosa**, FLOERKE.

On stones, Clark's Brook, Davis Cove, St. John's Beach, Middle Arm, Halfway Point, Coal River and River Head; also another form at Chimney Cove, and another at Wild Cove, Newfoundland. (*Waghorne*.)

589. **V. brachyspora**, ARNOLD.

On stones, Middle Arm, Newfoundland. (*Waghorne*.)

590. **V. dolosa**, HEPP.

On stones, Leading Tickle and Frenchman's Cove, Newfoundland. (*Waghorne*.)

591. **V. epidermidis** forma **punctiformis**, BRANTH.

Greenland. (*Arct Man.*) On living alder stems along the Rideau River, south of Ottawa, Ont., April 30th, 1897. (*Macoun*.)

58. **PYRENULA**, (ACH.)592. **P. punctiformis**, (ACH.) NÆG. & HEPP.

On basswood bark, Central Ontario Junction, Hastings Co., Ont.; on bark, Canfield Junction, Ont.; on maple bark, King's Mountain, Chelsea, Que., and Rockcliffe Park, Ottawa, Ont., 1897. (*Macoun*.) Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.)

593. **P. thelæna**, (ACH.) TUCKERM.

Labrador or Newfoundland. (*Waghorne* fide *Eckfeldt*.) On bark of a young white birch along the Rideau River, near the

Hogsback, south of Ottawa, Ont., April 30th, 1897; along the Beaver Meadow, Hull, Que. (*Macoun.*)

594. ***P. gemmata***, (ACH.) NÆG. & HEPP.

On bark of trees along the Gaspé Coast, Que.; on maple trunks at Ottawa, Ont.; on trunks at Belleville and Central Ontario Junction, Hastings Co., Ont. (*Macoun.*) On bark, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*)

595. ***P. cinerella***, (FLOT.) TUCKERM.

On maple and black ash bark at Ottawa, Ont., April 19th, 1898. (*Macoun.*)

596. ***P. hyalospora***, (NYL.) TUCKERM.

On bark of trees, London, Canada. (*A. T. Drummond.*) On bark of trees at Belleville, Hastings Co., Ont. (*Macoun.*)

597. ***P. patellaræformis***, ECKFELDT.

On young black ash, Billing's bush, Rideau Park, Ottawa, Ont., April 19th, 1897. (*Macoun.*)

598. ***P. leucoplaca***, (WALLR.) KÆRB.

On bark of black ash at Belleville and of maples at Central Ontario Junction, Hastings Co., Ont.; on maple bark in woods near Hull, Que., May 5th, 1897. (*Macoun.*)

599. ***P. pithyophila***, TH. FR.

On blue beech bark, Central Ontario Junction, Hastings Co., Ont., Oct. 24th, 1893. (*Macoun.*)

600. ***P. mamillana***, (ACH.) TUCKERM.

On bark of trees at Carleton Place, near Ottawa, Ont.; also on trees at Shannonville, Hastings Co., Ont. (*Macoun.*)

601. ***P. fallacia***, ECKFELDT.

On young maple trees at Chelsea, Que., May 15th, 1894. (*Macoun.*)

602. ***P. nitida***, ACH.

On bark, Rigaud Mountain, Vaudreuil Co., Que. (*Rev. G. Ducharme.*) Quite common on trunks, of beech trees at Ottawa

and vicinity ; at Belleville and Seymour West, Ont.; on birch trees at Hastings, Burrard Inlet, B.C. (*Macoun.*)

603. **P. glabrata**, ACH.

On trees, Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

604. **P. lactea**, MASS.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

605. **P. nitidella**, MULL.

Labrador or Newfoundland. (*Waghorne fide Eckfeldt.*)

59. **PYCNIDES.**

606. **P. verisimilide**, BRANTH.

On black ash bark at Billing's bush, Rideau Park, south of Ottawa, Ont., April 19th, 1897. (*Macoun.*)

ADDENDUM.

PHYSCIA.

607. **P. scopularis**, NYL.

On rocks, Capstan Island, Labrador ; and on stones, Bay of Islands, Newfoundland. (*Waghorne.*)

NORMANDIA.

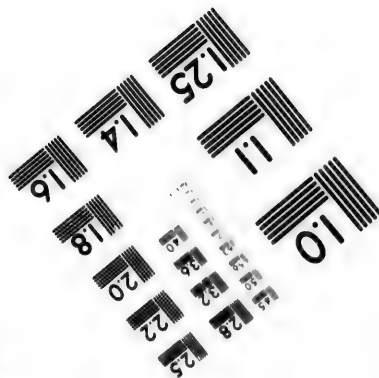
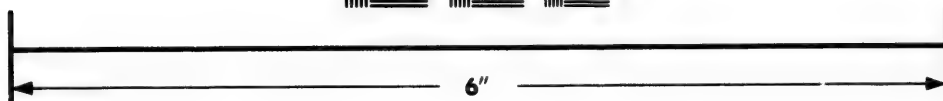
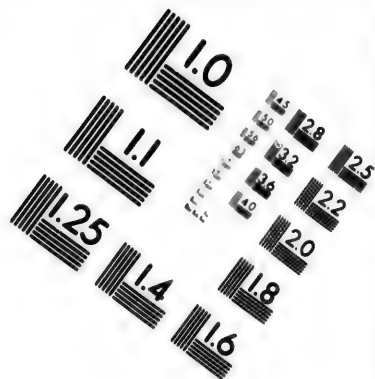
608. **N. lætevirens**, TURN. & BORR.

On rocks, St. George Island, Behring Sea, Alaska, June 17th, 1897. (*J. M. Macoun.*) Greenland. (*Arct. Man.*)

RINODINA.

609. **R. pyrina**, ACH.

On stones, Coal River, and on rocks at Meadows, Little Harbour and River Head, Newfoundland. (*Waghorne.*)



**23 WEST MAIN STREET
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BIATORA.

- 610.
- B. asserculorum**
- , SCHRAD.

On old wood at L'Anse au Clair, Labrador. (*Waghorne.*)

LECIDEA.

- 611.
- L. intumescens**
- , FLOERKE.

Parasitic on the thallus of *Lecanora sordida*; on stones at Chimney Cove, Newfoundland. (*Waghorne.*)

SECOLIGA.

- 612.
- S. Friesii**
- , FLOT.

On decaying vegetable matter, St. John Beach, Newfoundland. (*Waghorne.*)

CONIANGIUM.

- 613.
- C. lapidicolum**
- , TAYL.

On stones, Chimney Cove, Newfoundland. (*Waghorne.*)

- 614.
- C. exile**
- , FLOERKE,

On bark, Clark's Brook, Newfoundland. (*Waghorne.*)

ADDENDUM TO PART VI.

1. **SPHAGNUM**, Dill.

2. **S. Girgensohnii**, Russ.

Sukkertoppen, Greenland, Aug. 6th, 1886. (*Jensen*.) Swamps at Edmonton, Murray mine, Sudbury, and Sunbridge, Ont. (*Jas. White*.) Abundant in Algonquin Park, Ont., 1890. (*Macoun*.) Queen Charlotte Islands, B.C. (*Law*.) Chilliwack River, B.C., July, 1901. (*J. M. Macoun*.) Swamps, head of Lake Lindeman, Yukon, 1898. (*Williams*.)

Var. **gracilescens**, WARNST, forma **squarrosa**, WARNST.

Peat bog, C che Lake, Algonquin Park, Ont., June 6th, 1900. (*Macoun*.)

Var. **stachyodes**, WARNST.

Peat bog, Catfish Lake, Algonquin Park, Ont., July 23rd, 1900. (*Macoun*.) Port Etches, Alaska, June, 1892. (*J. M. Macoun*.)

Var. **hygrophilum**, WARNST.

Wet woods, Casselman, Ont. (*Macoun*.) Swamps, Edmonton and Sudbury, Ont., 1893. (*Jas. White*.)

3. **S. Russowii**, WARNST. var. **p cilum**, WARNST.

Peat bog, C che Lake, Algonquin Park, Ont., June, 1900. (*Macoun*.)

Var. **rhodochroum**, Russ.

Battle Harbour, Labrador, 1893. (*Waghorne*.)

Var. **Girgensohnioides**, Russ.

In a peat bog, Chalk River, Ont., Oct., 1892. (*Macoun*.)

4. **S. fuscum**, SCHPR. var. **fuscoescens**, WARNST.

In a peat bog, Catfish Lake, Algonquin Park, Ont., July, 1900; peat bog, Prince Albert, Sask., June, 1896. (*Macoun*.) In swamps about Dawson, Yukon, 1899. (*Williams*.)

Var. *pallescens*, WARNST.

Bogs, Jumping Pound Creek, Alta., 1897. (*Macoun.*) In a bog, Lat. 61°, Long. 104°, W., July 24th, 1893. (*J. W. Tyrrell.*)

Var. *viride*, WARNST.

In peat bogs, Chalk River and Algonquin Park, Ont., July, 1900. (*Macoun.*)

5. *S. tenellum*, SCHPR. var. *rubrum*, WARNST.

In bogs, Greenland. (*Ryder.*) In bogs, Belledune, New Brunswick, 1875. (*Chalmers.*) In bogs, Port Arthur, Ont., 1889. (*Thos. Walker.*) Fort Good Hope, Mackenzie River, July 18th, 1892. (*Miss E. Taylor.*) Bogs, Lat. 61°, Long. 104°, W., July 24th, 1893. (*J. W. Tyrrell.*)

6. *S. Warnstorffii*, RUSS.

In a peat bog, Algonquin Park, Ont., July, 1900. (*Macoun.*) Port Etches, Alaska, Aug., 1892. (*J. M. Macoun.*) Swamps at the head of Lake Lindeman Yukon, 1898. (*Williams.*)

Var. *versicolor*, C. JENSEN.

In bogs, Greenland. (*Rosenvinge.*)

Var. *purpurascens*, RUSS.

North Arm, Newfoundland, 1899. (*Waghorne.*) In a swamp at the head of Lake Lindeman, Yukon, 1898. (*Williams.*)

Var. *viride*, WARNST.

In a cedar swamp at Southampton, Bruce Co., Ont., Aug.-t, 1901. (*Macoun.*)

10. *S. Lindbergii*, SCHPR. var. *microphyllum*, WARNST.

St. Paul Island, Behring Sea. (*J. M. Macoun.*)

11. *S. riparium*, AONGSTR.

L'Asne au Loup, Labrador, 1894. (*Waghorne.*)

13. **S. cuspidatum**, EHRH.

Abundant in a peat bog, Brulé Lake, Algonquin Park, June, 1900. (*Macoun.*)

Var. **submersum**, SCHPR.

Newfoundland, 1893. (*Waghorne.*) Mer Bleue, near Ottawa, Ont., June, 1892. (*Macoun.*)

16. **S. teres**, AONGSTR. var. **squarrosulum**, (LESQ.) SCHPR.

Cañon City, Dyea Creek, on a damp mountain side, Alaska. 1899. (*Williams.*)

17. **S. Wulfianum**, GIRG.

Canaan Forks, N.B., Aug., 1894. (*J. Moser.*) Quite common in the Mer Bleue, near Ottawa, Ont., and in Algonquin Park, Ont. (*Macoun.*)

18. **S. compactum**, DC.

Peat bogs, Labrador, Aug., 1897. (*A. P. Low.*) Bogs, Departure Bay, Nanaimo, Vancouver Island, June, 1887. (*Macoun.*)

20. **S. Pylaiei**, BRID.

Abundant in a bog near Aspey Bay, Cape Breton Island, N.S., Aug. 6th, 1898. (*Macoun.*)

23. **S. imbricatum**, HORNSCH. & RUSS.

Very abundant in bogs near Aspey Bay, and around Louisburg, Cape Breton Island, N.S.; Aug., 1898; in damp woods, near the roundhouse, Niagara Falls, Ont., May 14th, 1901. (*Macoun.*)

954. **S. obtusum**, WARNST.

This species seems to be very rare. Only a few stems were collected floating on the marshy border of a lake near Lake Opeongo, Algonquin Park, Ont., Aug. 20th, 1900. (*Macoun.*) Named by Dr. Warnstorff.

955. **S. molle**, SULLIV.

This is a common species around boggy depressions and ponds on Sable Island, N.S., July 1899. (*Macoun.*)

956. **S. centrale**, ARN. & JENS.

Notre Dame Bay, Newfoundland, 1893. (*Waghorne.*)

957. **S. Dusenii**, WARNST.

White Cove, Seal Bay, Newfoundland, 1891. (*Waghorne.*)

2. **ANDREÆA**, Ehrhart.28. **A. petrophila**, EHRH.

A common species on rocks, both dry and wet, at Baddeck, Margaree, Louisburg, and Half-way Brook, Cape Breton Island, N.S., July, 1898; on rocks, C  che Lake, Algonquin Park, Ont., June, 1900. (*Macoun.*) Summit Lake, Manicuan River, Eastern Quebec, July, 1895. (*A. I. L. w.*) Common about Lake Lindeman, Yukon, May 17th, 1899, in fine fruit. (*Williams*)

Var. **papillosa**, LINDB.

On rocks, Greenland. (*Lange.*)

Var. **acuminata**, SCHIMP.

Lake Lindeman, Yukon, 1899; all the specimens examined seemed to be dioiceous. (*Williams.*)

Var. **parvifolia**, (MULL.) WILLIAMS.

Sheep Camp, Dyea Creek, Alaska, 1899. (*Williams.*)

Subsp. **sublaevis**, KINDB. Europ. & Am. Mosses, Pt. II., 393.

Leaves small, distant, spreading, generally nearly smooth; perichetial leaves generally acute, long-acuminate. Tufts low, blackish brown.

On rocks, Carmanah Point, south coast of Vancouver Island, May 9th, 1892. (*J. M. Macoun.*)

83. **A. crassinervis**, BRUCH.

On rocks, northern Newfoundland. (*Waghorne.*)

958. **A. Rothii**, WEB. & MOHR., Subsp. **falcata**, SCHIMP.

On rocks, Parson's Mountain, near Victoria, Vancouver Island, May 19th, 1893. (*Macoun.*)

959. **A. obtusifolia**, BERGGREN.

On rocks, Greenland. (*Berggren.*)

5. **PHASCUM**, Linn.38. **P. cuspidatum**, SCHREB.

On earth on the wood roads around the base of Queenston Heights, Ont.; in fine fruit, May 8th, 1901. Found only on hard baked earth. (*Macoun.*)

8. **GYMNOSTOMUM**, Hedw.43. **G. calcarea**, NEES & HORNSCH.

On rocks, Credit Forks, Ont. (*James White. Thos. Walker.*)
On earth in a ravine at Grand Narrows, Cape Breton Island, N.S., 1898. (*Macoun.*)

44. **G. rupestris**, SCHLEICH.

On ledges and boulders at the old mill, Rockcliffe, Ottawa, Ont., 1896. (*Macoun.*)

45. **G. curvirostris**, EHRH.

On dripping rocks, Credit Forks, Ont. (*Jas. White Thos. Walker.*) On wet ledges of rocks, Rockcliffe, Ottawa, and at King's Mountain, Chelsea, Que., 1897; on rocks at Saddle Mountain, Banff, Alta.; in the Crow's Nest Pass, and on Moose Mountain, Alta., Rocky Mountains, 1897. (*Macoun.*) Yukon River cliffs, just below Dawson, Yukon, 1899. (*Williams.*)

Var. **commutatum**, CARD. & THER. (*Bot. Gaz. Vol. p.*)

This variety has long narrow leaves and the cells of the areolation are everywhere long and smooth. In the type, the upper areolation is composed of irregular cells, rectangular, quadrate and triangular, with scattered papillæ.

Newfoundland. (*Waghorne.*)

47. **G. tenue**, SCHRAD.

On damp limestone rocks at Credit Forks, Ont., 1893. (*James White.*) Drummond's specimen No. 21 from Lake Winnipeg belongs here, but the reference from Owen Sound in Pt. VI. belongs to the next.

960. **G. pusilla**, KINDB., Revue Bryol. 1896.

Leaves obtusate, subacute, not arrounded at the apex. Perichetial not larger and not sheathing, the inner one subovate and shorter. Capsule oblong, not longer than the beak ; teeth none or rudimentary. Annulus not revoluble. Resembles *Weisia tenuis* in size.

On limestone rocks at Owen Sound, Ont., July 31st, 1871 ; on earth in a ravine at Grand Narrows, Cape Breton Island, N.S., 1898. (*Macoun.*)

9. **EUCLADIUM**, Bryol. Europ.48. **E. verticillatum**, BRYOL. Europ.

On wet rocks on Carmanah Point, south coast of Vancouver Island, May, 9th, 1892. (*J. M. Macoun.*)

10. **ANCECTANGIUM**, Schw.49. **A. compactum**, SCHW.

On rocks on Nagai Island, Shumigan Group, Alaska, Sept. 18th, 1891. (*J. M. Macoun.*)

961. **A. Canadense**, KINDB., Ott. Nat. vol. XIV, 86.

Leaves small, channeled, involute, smooth and (also at the base) entire, from broad base abruptly acuminate ; only the lowest basal cells narrow ; costa scarcely excurrent ; tufts dense, rusty red with green branching tops, about 5 cm. high ; capsules not seen.

The specimens upon which this was founded were collected near Victoria, Vancouver Island, May 7th, 1875. (*Macoun.*)

11. **WEISIA**, Hedw.50. **W. viridula**, LINN.

The Hull and Victoria references in Part VI. p. 14, are to be taken out.

51. **W. convoluta**, C. M. & KINDB.

On a bank near the sea above Comox, Vancouver Island, June 20th, 1893. (*Macoun.*)

902. **W. rutilans**, HEDW.

W. Wolfii, Lesq. & James, Mosses of N. America, 57.

On earth at Leamy's Lake, Hull, Que., Sept. 16th, 1889; on earth at Victoria, Vancouver Island, Dec. 23rd, 1875, named *W. Wolfii* by Austin. (*Macoun.*)

Var. **Ganderi**, JURATZKA.

Capsule oblong, scarcely longer than the beak.

On earth, subject to flood, along the Bonnechere at Golden Lake, Sept. 27th, 1900; also on earth on old stumps subject to flood, shore of Lake Duchesne above Britannia, near Ottawa Ont., Oct., 1900. (*Macoun.*)

12. **DICRANOWEISIA**, Lindb.52. **D. crispula**, (HEDW.) LINDB.

On rocks at the mouth of Skeena River, B.C.; also on Attu Island, Behring Sea, 1891. (*J. M. Macoun.*) On rocks, Moose Mountain, Rocky Mountains, Alta., alt. 6,500 feet, July, 1897. (*Macoun.*) Above the basin at Juneau, Alaska. (*Miss G. Cooley.*) Common on rocks around Lake Lindeman, Yukon, 1899. (*Williams.*)

53. **D. cirrhata**, LINDB.

Fort Chimo, Labrador, Aug. 30th, 1896. (*A. P. Low.*)

963. **D. obliqua**, LINDB.

On stones along Asulcan Creek, near the glacier, Selkirk Mountains, B.C., Aug. 7th, 1890. (*Macoun.*)

964. **D. contermina**, REN. & CARD.

Common on rocks around Lake Lindeman, Yukon, 1899. (*Williams.*)

14. **RHABDOWEISIA**, Bruch & Schimp.5b. **R. striata**, SCHRAD.

R. fugax, Bruch & Schimp, Cat. Can. Musci., Pt. VI., 16.

On rocks, C  che Lake, Algonquin Park, July 12th, 1900. (*Macoun.*)

15. **CYNODONTIUM, Schimp.**57. **C. Schisti, (WAHLB.) LINDB.**

On earth about ledges of rock, Lake Lindeman, Yukon, 1899. (*Williams.*)

69. **C. polycarpum, Schimp.**

On damp rocks, at C  che Lake and Brul   Lake, Algonquin Park, 1900. (*Macoun.*) On rocks at Seal Lake and Fort Chimo, Labrador, 1896. (*A. P. Low.*) Common on rock on Upper Dyea Creek, Alaska ; also just over the Coast Range on streams flowing into Lake Lindeman, Yukon, 1899. (*Williams.*)

Subsp. **fallax**, LIMPR.

On rocks, Newfoundland. (*Waghorne.*)

63. **C. strumiferum, EHRH.**

Specimens collected on the North Arm of Burrard Inlet, B.C. and on Salt Spring Island, Gulf of Georgia, belong here though placed under *C. polycarpum* in the Cat. Can. Musci, page 17. On damp rocks near Victoria, Vancouver Island, May, 1893 (*Macoun.*) Clearwater Lake, Labrador, 1896. (*A. P. Low.*) Lake Lindeman, Yukon, in crevices of rock. (*Williams.*)

965. **C. torquescens, (BRUCH.) LIMPR.**

On thin earth over rock, Lake Lindeman ; on rock at Dawson, Yukon, 1899. (*Williams.*)

ONCOPHORUS, Brid.64. **O. virens, SWARTZ.**

Cynodontium virens, Schimp. Cat. Can. Musci., Pt. VI., 17.

On earth at Fort Chimo, Hudson Strait, 1896. (*A. P. Low.*) On earth near Fort Assiniboine, Athabasca River, Sept. 1872. ; on old logs, Jumping Pound Creek, Alta., Rocky Mountain, 1897. (*Macoun.*) About springs between lakes Lindeman and Bennett, Yukon, 1899. (*Williams.*)

Var. **serratus**, (B. & S.) LIMPR.

On earth along streams flowing into Lake Lindeman, Yukon, 1899. (*Williams.*)

Var. **nigrescens**, (SCHIMP.) WILLIAMS.

A depressed blackish variety growing on the margin of an alpine pond just below snow banks about 1,000 feet above Lake Lindeman, Yukon, 1899. (*Williams.*)

65. **O. Wahlenbergii**, BRID.

Cynodontium Wahlenbergii, (Brid.) Can. Cat. Musci., Part VI., 18.

Dr. Bell's specimen from Hudson Strait, belongs here and not to *O. virens*. On decaying logs at Margaree, and on sand, Half Way Brook, Cape Breton Island, N.S., 1898; on old logs near Hull and Meech's Lake, Que. (*Macoun.*) On old logs at Kingston, Ont., 1881. (*Prof. Fowler.*) On earth, Fort Chimo, Labrador, 1896. (*A. P. Low.*) Abundant on dead sticks and rotten wood, C  che Lake, Algonquin Park, June, 1920. (*Macoun.*) Common about Dawson, Yukon, on old stumps and logs in fine tufts up to 6 cm. high. (*Williams.*)

16. **DICHODONTIUM**, Schimp.66. **D. pellucidum**, SCHIMP.

On earth, Port Etches, Lat. 60° 30', Alaska, 1892; Unalaska, Behring Sea, 1891. (*J. M. Macoun.*) On wet rocks, Louisburg, Cape Breton Island, N.S., 1898; shore of Shawnigan Lake, Vancouver Island, 1893. (*Macoun.*)

Subsp. **fagimontanum**, BRAITHW.

Rocks of Portage River, near the Columbia, Rocky Mountains, No. 108. (*Drummond.*)

67. **D. flavescens**, (DICKS.) LINDB.

The specimens appearing under this species in Part VI. are now divided between this and the next, as below.

Mount Albert, Gasp   Co., Que., and at Forteau, Labrador, Lat. 57°. (*J. A. Allen.*) Port Etches, Alaska, Lat. 60° 30', June 18th, 1892. (*J. M. Macoun.*) Shore of Shawnigan Lake, near Victoria, and on a bank by the sea at Comox, Vancouver Island, 1893. (*Macoun.*)

966. **D. subflavescens**, KINDB. in Hedwigia, 1896, 59.

Leaves channelled from suboblong base tapering to an attenuate acumen, serrate often to below the middle, long distant

nearly smooth ; cells and costa as in the last. Capsule symmetric, erect ; teeth nearly purplish ; pedicel low, pale red. Perichetial leaves narrower than the others, long-acuminate and generally subulate ; the upper part of the acumen nearly filled by the percurrent or excurrent costa. Perigonal leaves large and long-acuminate. Leaves of male plants sometimes obtuse. Tufts very tomentose up to the green tips. Often tall.

On wet rocks, Telegraph Trail, west of Fraser River, Lat. 54°, B.C., June 10th, 1875 ; on wet clay soil in a railway cutting at Hastings, near Vancouver, B.C., April, 1889 ; on wet rocks, Goldstream and Nanaimo, June, 1893, and on Mount Arrowsmith, Vancouver Island, July 17th, 1887 ; alt. 5,500 feet. (*Macoun.*)

17. **TREMATODON, Michx.**

68. **T. ambiguus, HEDW.**

On earth in woods at Baddeck, and by the roadside, Louisburg, Cape Breton Island, N.S., 1898 ; on wet earth at Casselman, South Indian and Ottawa, Ont., 1892 ; very common on old lumber roads, Algonquin Park, Ont, June, 1900. (*Macoun.*)

967. **T. acicularis, KINDB.,** *Revue Bryol*, 1896.

Leaves broadly suboval, truncate above, pointed by the *excurrent* costa ; perichetial leaves nearly similar but larger and longer. Peristomial teeth orange, split in the middle ; basal tube red.

On the border of a bog at Craigellachie, Eagle River, B.C., July 18th, 1889. Included in *T. ambiguum* in Part VI. p. 19. (*Macoun.*)

19. **DICRANELLA, Schimp.**

71. **D. crispa, (ELPH.) SCHIMP.**

Juneau, Alaska. (*Miss G. Cooley.*) On damp, sandy soil at the mouth of Bonanza Creek, Yukon, 1899. (*Williams.*)

72. **D. Grevilleana, SCHIMP.**

On earth in a ravine at Woodstock, N.B., July 4th, 1899. (*Macoun.*)

74. **D. squarrosa, STARKE.**

In springy places in a ditch by the roadside summit of Smoky Mountain, Cape Breton Island, N.S., 1898 ; in a boggy place

near the summit of Castle Mountain, Rocky Mountains, 1885 ; in wet springy places south of the canal, along the railway, west of Dow's swamp, Ottawa, Ont., July 6th, 1900. (*Macoun.*)

75. *D. cerviculata*, SCHIMP.

On wet calcareous earth at Louisburg, Cape Breton Island, N.S., 1898. (*Macoun.*) On earth, Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

968 *D. polaris*, KINDB., Note on Canad. BRYOL. 1893.

Differs from *D. cerviculata*, in that the plants are smaller, the leaves shorter and nearly straight, and not flexuous ; upper cells suboblong ; costa broader, filling the whole acumen. Capsule very small and not striate, and less distinctly strumose ; teeth nearly entire or faintly cleft. Stem very short.

On earth, St. Lawrence Island, Behring Sea, Aug. 15th, 1891. (*J. M. Macoun.*)

969. *D. oeriviculatula*, KINDB., Note on Canad. BRYOL. 1893.

Differs from *D. cerviculata* by its leaves being gradually narrowed, its cells short-quadrate, only the inner basal being narrow ; costa narrow and well defined, only in the perichetial leaves being distinctly excurrent. Tufts dark green.

Capsule strumose, finally plicate, generally erect and symmetric ; teeth and pedicel as in *D. cerviculata*.

On rocks, Nottingham Island, Hudson Strait, Aug. 24th, 1884. (*Dr. R. Bell.*) In crevices of overhanging damp rocks, Half Way Brook, Cape Breton Island, N.S., Aug. 6th, 1898. (*Macoun.*) The latter specimens were in fine fruit.

76. *D. varia*, (HEDW.) SCHIMP.

Below Lake Lebarge on Thirty-Mile River, Yukon, 1899. (*Williams.*) In a railway cutting at Goldstream, Vancouver Island, June 2nd, 1893. (*Macoun.*)

79. *D. subulata*, (HEDW.) SCHIMP.

Growing on wet earth Clearwater Lake, Labrador, 1896. (*A. P. Low.*) Wet earth, Rainy Lake, Algonquin Park, Ont., June, 1900. (*Macoun.*) Growing on a thin layer of damp earth over rock at Lake Lindeman, Yukon, 1899. (*Williams.*)

80. **D. heteromalla**, SCHIMP.

On earth at Carmanah Point, south coast of Vancouver Island. (*J. M. Macoun.*) On earth in woods at Baddeck, Margaree and Louisburg, Cape Breton Island, N.S., 1898; on earth, in Algonquin Park, Ont., June, 1900; in Stanley Park, Vancouver City, B.C. (*Macoun.*) On knolls in woods, Credit Forks and Edmonton, Ont. (*Jas. White.*) Juneau, and at Gold Creek Cañon, near Juneau, Alaska. (*Miss G. Cooley.*) Sheep Creek, Dyea Creek, Alaska, 1899. (*Williams.*)

DICRANUM, Hedw.82. **D. fulvellum**, (DICKS.) SMITH.

On rock at Long Lake, a few miles below Chilcoot summit, Yukon, 1899. (*Williams.*)

83. **D. molle**, WILS.

On rocks, Labrador coast, Hudson Strait, Aug. 2nd, 1897. (*A. P. Low.*) Collected at Lindeman on damp clayey soil subject to overflow, Yukon, 1899. This species has been previously collected outside of Europe in Alaska and Greenland. (*Williams.*)

970. **D. falcatum**, HEDW.

Sterile plants collected on rock at Lake Lindeman, Yukon, 1899. (*Williams.*)

84. **D. Starkei**, WEB. & MOHR.

On Mount Queest, Gold Range, B.C., alt. 6,000 feet, 1889. Referred in Cat. Can. Musci to *D. Muehlenbeckii*. (*J. M. Macoun.*) On rocks, summit Lake Manicuanan River, Que., 1895. (*A. P. Low.*)

85. **D. Blyttii**, BRUCH & SCHIMP.

On rocks, at the Hot Springs, Kootenay Lake, B.C., alt. 4,500 feet, July 9th, 1890. (*Macoun.*) Rather common on rocks about Lake Lindeman, Yukon, 1899. (*Williams.*)

971. **D. pumilum**, SAUTER.

On rocks, coast of Labrador. (*Waghorne.*)

86. **D. strictum**, SCHLEICH.

On old logs in the Crow's Nest Pass, Rocky Mountains, alt. 4,000 feet, 1897. (*Macoun.*)

87. **D. montanum**, HEDW.

On rotten logs in swamps at Edmonton, Ont., 1892. (*Jas. White.*) On sandy soil, Sable Island, N.S., July, 1899; barren; abundant and fruiting on the bases of trees, Algonquin Park, Ont., June, 1900. (*Macoun.*)

88. **D. fulvum**, HOOK.

On boulders in the Big Intervale, Margaree, Cape Breton Island, N.S., 1898; very abundant on boulders and in fine fruit near Eel River, N.B., Aug., 1899. (*Macoun.*)

89. **D. viride**, SCHIMP.

Bases of beech trees, Edmonton, Ont. (*Jas. White.*) On damp earth at the base of trees, Big Intervale, Margaree, Cape Breton Island, N.S., 1898; on trees at Agassiz, B.C., May, 1889. This was named var. *grosiferum* by Kindberg. On trunks, Algonquin Park, Ont., June, 1900; on the bases of trees in woods, Southampton, Ont., Aug., 1901. (*Macoun.*)

Var. *laeve*, Ren. & Card., Botanical Gazette, Vol. XXX., p. 15.

A forma typica habitu multo laxiore foliusque minus congestis dorso laevibus distincta.

On old stumps, Bay of Islands, Newfoundland, 1895. (*Waghorne.*)

972. **D. serratum**, KINDB.

On boulders at C  che Lake, Algonquin Park, Ont., June 8th, 1900. (*Macoun.*)

90. **D. flagellare**, HEDW.

On rotten logs at Edmonton, Ont., 1892. (*Jas. White.*) On old logs in woods at Baddeck, and at Louisburg, Cape Breton

Island, N.S., 1898; on old logs, Algonquin Park, Ont., June 1900; on old logs in woods, Jordan Station, Lincoln Co., Ont., May, 1901. (*Macoun.*)

92. ***D. Groenlandicum***, BRID.

In boggy ground, Clearwater Lake, Labrador, Aug. 2nd, 1896. (*A. P. Low.*) Capstan Island, Labrador, 1894. (*Waghorne.*)

93. ***D. subulifolium***, KINDB.

On old logs in a ravine at Woodstock, N.B., July 3rd, 1899. (*Macoun.*)

973. ***D. Howellii***, REN. & CARD., Bot. Gaz. 1889.

Leaves with a sublinear acumen, in the upper half serrulate, narrower than in *D. majus*; cells as in *D. majus*; costa not distinctly excurrent and nearly smooth. Capsule sulcate, solitary. Inner perichetial leaves entire, attenuate to an awn. Tufts often golden yellow.

On earth, Chilliwack Valley, B.C., 1901; Port Etches, Alaska, Lat. 60° 30', 1892; Unalaska Island, Behring Sea, 1891; Nagai Island, Shumigan Group, Alaska, 1892, and Middleton Island, Alaska, Lat. 59° 30', 1892. (*J. M. Macoun.*) On earth and rocks, Texada Island, Gulf of Georgia, 1885. (*Dr. G. M. Dawson.*) On earth in woods, Craigellachie, B.C., 1889; on rocks, North Arm, Burrard Inlet, B.C., 1889; abundant at Victoria (1887) and at Comox (1893), Vancouver Island, B.C. (*Macoun.*)

Subsp. ***angustifolium***, KINDB., Bryol. N. Am. & Eur. p. 198.

Capsule not sulcate. Leaves nearly entire. On rocks, Burnside road, near Victoria, Vancouver Island, May 5th, 1893; on old logs, Comox, V.I., June 19th, 1893. (*Macoun.*) Nagai Island, Shumigan Group, Alaska, September, 1892. (*J. M. Macoun.*)

95. ***D. sulcatum***, KINDB.

Newfoundland. (*Waghorne.*) On earth in woods, Big Intervale, Margaree, and on rocks at Half-way Brook, Cape Breton Island, N.S., 1898; on old logs, Cache Lake, Algonquin Park, Ont., June, 1900; on earth in woods at Revelstoke, B.C., May 6th, 1890; on logs at Parson's Mountain, Victoria, Vancouver

Island, 1893. (*Macoun.*) On logs, Carmanah Point, south coast of Vancouver Island, 1892; on earth, Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

96. **D. crispulum**, C. M. & KINDB.

On logs in woods at Baddeck, and on rocks, Big Intervale, Margaree, and Half-way Brook, Cape Breton Island, N.S., 1898; on earth in woods, C  che Lake, Algonquin Park, Ont., June, 1900. (*Macoun.*)

98. **D. majus**, SMITH.

On earth in woods at Baddeck, Margaree, and Half-way Brook, Cape Breton Island, N.S.; rather common, 1898. (*Macoun.*) Sitka, Alaska. (*Miss G. Cooley.*)

Var. **orthophyllum**, AL. BR.

This variety with nearly straight erect-spreading leaves bears little resemblance to the beautifully falcate-leaved *majus*. Fruiting specimens collected at Lake Lindeman, Yukon, 1899. (*Williams.*)

99. **D. scoparium**, HEDW.

A very common species on Cape Breton Island, N.S. Specimens were collected at Baddeck along the north shore and on Smoky Mountain, 1898; on earth, Sable Island, N.S., July, 1899; abundant in Algonquin Park, Ont., June, 1900. (*Macoun.*) On rocks, Credit Forks, Ont., 1893. (*Jas. White.*) Loring, also at Salmon Creek, near Juneau, Alaska. (*Miss G. Cooley.*)

Subsp. **involutum**, KINDB., Bryol. N. Am. & Eur. p. 196.

Leaves falcate not at all or sparingly porose, very concave, subconvolute in the middle very chlorophyllose, sometimes undulate; cells generally oblong-oval. Capsules unknown.

On rocks near the sea, Victoria Arm, near Victoria, Vancouver Island, May 13th, 1893. (*Macoun.*)

974. **D. consobrinum**, REN. & CARD.; KINDB., Bryol. N. Am. & Eur. p. 193.

Differs from *D. Canadense*; leaves shorter, perichetial leaves short-aristate, often emarginate; capsules smooth, often in pairs.

On earth in woods at Belleville, Hastings Co., Ont., Aug., 1867, referred to *D. scoparium*, var. *orthophyllum* at the time; also on roots of trees, Pirates' Cove, Strait of Canso, N.S., July 7th, 1883; not uncommon on earth on the old land, Sable Island, N.S., July and August, 1899. (*Macoun.*)

101. ***D. congestum***, BRID.

Apparently quite common on Cape Breton Island, N.S., collected on old logs at Baddeck, Margaree, Half-way Brook and Louisburg, but always barren, 1898; on rocks, C  che Lake, Algonquin Park, Ont., June, 1900. (*Macoun.*) On swampy ground at Dawson, Yukon, 1899. (*Williams.*)

102. ***D. fuscescens***, TURN.

On earth, Clear water Lake, Labrador. (*A. P. Low.*) In Lat. 61   Long. 104, W. on barren grounds west of Hudson Bay, July 24th, 1893. (*J. B. Tyrrell.*) On rotten logs at Edmonton, Ont., Sept. 22nd, 1892. (*Jas. White.*) On old logs, Algonquin Park, Ont., June, 1900; on rocks and logs in woods at Victoria, Vancouver Island, May 1893. (*Macoun.*) Sitka, Alaska. (*Miss G. Cooley.*) On rock along Dyea Creek, Alaska; and on earth, Lake Lindeman, Yukon. (*Williams.*)

Subsp. ***subbrevifolium***, KINDB., Bryol. N. Am. & Eur. p. 198.

Leaves larger subconvolute, nearly entire; costa not excurrent. Capsule sulcate. Stem rather tall. Habit of *D. brevifolium*, Lindb.

On rocks at Hector, and at the head of Lake Louise, Rocky Mountains, Aug. 18th, 1891. Referred to *D. brevifolium* in Part VI., p. 260. (*Macoun.*)

975. ***Dicranum Demetrii***, REN. & CARD., Botanical Gazette, Vol. XXII., p. 48.

In very compact, yellowish-green tufts, brownish and a little tomentose below. Stems erect, simple or sparingly branching, three to four inches long. Leaves crowded, erecto-patent when moist, crispate when dry, from an oblong-obovate base rather suddenly constricted and linear-subulate, canaliculate, smooth, quite entire or subsinuate at apex, 3-6 mm. long, 0.30-0.60 mm. broad at base; costa narrow, percurrent or subexcurrent; cells

smooth, small, quadrate or short-rectangular and incrassate in the upper part, becoming narrowly linear and slightly porose toward the base near the costa, the alar looser, subrectangular. Perichæ-tial leaves from an oblong sheathing base suddenly long-cuspi-date. Fruit unknown. Seems diœcious.

Seems to have some affinities with *D. elongatum* Schw., but is readily distinguished at first sight from this species by its leaves being crisped in a dry state, which gives it rather the appearance of *D. montanum*, Hedw., and also by the very different areolation of the leaves.

Rattler's Bight, Labrador, 1892. (*Waghorne.*)

976. ***D. trachyphyllum***, REN. & CARD., Botanical Gazette, Vol. XXII. p. 48.

Diœcious. Cespitose, green or olivaceous. Stems erect; 2-6cm. long, simple or branching, sparingly tomentose in the lower part. Leaves falcate or flexuous-patent when moist, flexu-ous-crisped when dry, often tufted, linear-lanceolate, canaliculate above and rather thickly subulate, strongly serrate on the margins, spinulose-dentate at apex; costa stout; about one-fourth of the width of leaf-base, generally very rough at back, percurrent or short-excurrent into a spinulose-dentate point; cells of the upper part quadrate or subrotundate, mostly papillose on the back, oblong or linear and smooth toward the base, the alar lax, inflated or hyaline. Perichetial leaves from an oblong sheathing base constricted into a long subula; costa narrower. Pedicels pale, at last twisted to the left above when dry. Capsule and peris-tome as in *D. fuscescens*.

Closely allied to *D. fuscescens*, Turn., to which it might be sub-ordinated as a sub-species, but nevertheless easily distinguished by the leaves being more strongly serrate, very rough on the back, less narrowly subulate and the nerve thicker and broader.

Leading Tickle and Hermitage Bay, Newfoundland, 1893 and 1895. (*Waghorne.*)

103. ***D. Muehlenbeckii***, BRUCH & SCHIMP.

On stumps at Fox River, Gaspé Co., Que., Aug. 3rd, 1882; on roots of trees, Lake Nipissing, Ont. Both these specimens were referred to *D. fuscescens* in Part VI., 29; on earth along Jumping Pound Creek, Rocky Mountains, 1897. (*Macoun.*) Growing

amongst boulders at Lake Lindeman, Yukon, 1899. (*Williams.*)
On rock, Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

105. **D. Canadense**, KINDB.

On earth in wet woods at Baddeck, Margaree and Half Way Brook, Cape Breton Island, N.S., 1898. Rather common and with the general appearance of the species but the capsule always single. On old logs at Belleville, Ont., May 26th, 1874; on earth in woods, White Trout Lake Algonquin Park, Ont., 1900. (*Macoun.*) On rotten logs at Edmonton, Ont., Sept., 1892. (*Jas. White.*)

977. **D. camptophyllum**, KINDB., BRYOL. N. Am. & Eur. p. 193.

Leaves tapering to a long subulate point, in the upper half of the acumen strongly serrate, falcate and not crisped when dry; cells not porose; those of the acumen subquadrate, the alar cells yellow, dilated, subrectangular, reaching to the costa; other basal cells long. Perichetial leaves obtusate or abruptly tapering to a generally longer, narrow-subulate or subfiliform awn with a long-excurrent costa. Capsule solitary, not sulcate. Tufts green above.

Clearwater Lake, northern Labrador, July 21st, 1896. (*A. P. Low.*)

Var. **poriferum**, KINDB.

On old logs along Bragg's Creek, Elbow River, Rocky Mountains, Alta., June 22nd, 1897. (*Macoun.*)

978. **D. algidum**, KINDB., Revue Bryol. 1896.

Leaves entire, nearly straight and suberect, only the upper flexuous, narrower than in *D. fuscescens*; angular cells nearly uniform dilated; other cells very porose, and generally long; costa very narrow, nearly smooth at the back or slightly rough in the excurrent part. Tufts soft and silky, green or dark green, nearly eradiclese. Capsules unknown. Habit of *D. spadiceum*; differs from it principally in not having convolute leaves.

On damp rocks, Lake Agnes, Rocky Mountains, Alta., Aug. 19th, 1891, alt. 7,500 feet. (*Macoun.*)

979. **D. subspadiceum**, KINDB., BRYOL. N. Am. & Eur. 199.

Leaves straight, erect, subconvolute, denticulate near the apex and at the excurrent part of the costa. Tufts brown with yellowish branching tops. Capsules unknown.

On Mount Aylmer, Devil's Lake, Banff Park, Alta., alt. 8,000 feet, Aug. 6th, 1891; on earth at Hector, Rocky Mountains, B.C., July 28th, 1885. (*Macoun.*)

107. **D. elongatum**, SCHW.

Near Fort Norman, Mackenzie River, July, 1892. (*Miss E. Taylor.*) On the summit of Mount Albert, Gaspé Co., Que., July 25th, 1881. (*J. A. Allen.*) On the Barren Grounds, Lat. 61°, Long. 104, W., west of Hudson Bay, July, 1893. (*J. B. Tyrrell.*) Along the Athabasca River, above Athabasca Landing, May 28th, 1888. (*J. M. Macoun.*) On earth, Mosquito Bay, Lat. 60° 42', Labrador, Aug. 13th, 1898. (*A. P. Low.*) St. Paul Island, Behring Sea. (*Dr. Merriam.*) Very common on both old stumps and rocks in damp places at Dawson, Yukon, 1899. (*Williams.*)

Subsp. **attenutaum**, KINDB., BRYOL. N. Am. & Eur. p. 201.

Leaves larger, gradually tapering to a somewhat long subula, nearly entire and often somewhat brittle, the uppermost flexuous; costa short-excurrent. Capsule more or less curved. Habit of *D. fragilifolium*. Tufts low.

Labrador. (*Waghorne.*) On earth along Jumping Pound Creek, Rocky Mountains, Alta., June 12th, 1897. (*Macoun.*)

Subsp. **subfragilifolium**, KINDB., BRYOL. N. Am. & Eur. p. 201.

Leaves narrow, long-subulate, faintly denticulate above, flexuous, sometimes brittle; costa long-excurrent, narrow. Capsule arcuate.

Newfoundland. (*Waghorne.*)

100. **D. fragilifolium**, LINDB.

On decayed wood along the Athabasca River above Athabasca Landing, May 28th, 1888; on old logs, Chilliwack Valley, B.C.; 1901. (*J. M. Macoun.*) Along Bragg's Creek, Elbow River, Rocky Mountains, Alta., June 22nd, 1897. (*Macoun.*) Very

common on decayed logs about Dawson, Yukon, 1899. (*Williams.*)

110. *D. longifolium*, HEDW.

On dry granite boulders in the Parry Sound District, Ont., May, 1893. (*Jas. White.*) On logs and rocks, Big Intervale, Margaree, on earth, sand and rocks, very common, at Half Way Brook, Cape Breton Island, N.S., July, 1898; also on boulders at Meech's Lake, near Chelsea, Que., 1893.

Var. *subalpinum*, MILDE.

On rocks, Blackwater River, Lake Nipigon, Ont., July, 1884; on rocks at Sudbury Junction, Ont., 1884; on rocks 5 miles below Hector, Rocky Mountains, B.C., Aug., 1890. (*Macoun.*)

112. *D. Bonjeani*, DE NOT.

On earth in woods, Queenston Heights Ont., May 11th, 1901; on damp earth, Pelee Point, Essex Co., Ont., May 29th, 1901; in wet woods, Camlachie, Lambton Co., Ont., June 18th, 1901. The latter specimens in fine fruit. (*Macoun.*) On rather dry ground at Lake Lindeman, Yukon, 1899. (*Williams.*)

980. *D. Røellii*, KINDB. in Hedwigia, 1896, p. 60.

Differs from *D. Bonjeani*, in the leaves neither spreading nor undulate, and their costa sometimes bilamellate. More nearly allied to *D. scoparium*, but differs from it in the leaves being faintly crenulate at the acumen, their upper cells suboblong, less porose; costa shorter, and nearly smooth at the back.

Collected on Vancouver Island by J. Røell. On rocks, Cadboro Bay, near Victoria, Vancouver Island, May 31st, 1893. (*Macoun.*)

981. *D. angustum*, LINDB.; Card. & Ther. Bot. Gaz., Vol. XXX., p. 15.

A polar moss, known only from some localities of North Finland and Siberia. It is easily distinguished from *D. Bonjeani*, De Not., by the leaves being straight, not undulate, convolute, and entire, and by the thinner costa, the less porose cells, and the perichætal leaves long-piliferous.

A few stems found amongst *Aulacomnium turgidum*, northwest shore of Hudson Bay Lat. 63° 55', 1893-1894. (*G. Comes.*) Sterile

specimens collected at Lake Lindeman in swamps, and found in good fruit at Dawson, Yukon, in July, 1899. (*Williams.*)

114. **D. subpalustre**, C. M. & KINDB.

Abundant on earth on all the old land, Sable Island, N.S., Aug., 1899. In all cases it was barren. (*Macoun.*)

115. **D. Bergeri**, BLAND.

In a bog, Clearwater Lake, Labrador, 1896; Mosquito Bay, Labrador, Lat. $60^{\circ} 42'$, 1898. (*A. P. Low.*) In a bog, Barren Grounds, Lat. 61° Long. 104° , west of Hudson Bay, 1893. (*J. B. Tyrrell.*) On earth in a boggy place Half Way Brook, Cape Breton Island, N.S., Aug., 1898; on earth, Sable Island, N.S., 1899; also at Catfish Lake and Rainy Lake, Algonquin Park, Ont., 1900; on logs and earth in bogs, Jumping Pound Creek; and on the slope of Mount Forget-me-not, Rocky Mountains, July, 1897; in peat bogs north of the Saskatchewan at Prince Albert, Sask., July, 1896. (*Macoun.*) Lake Lindeman, mouth of Little Salmon River and near Dawson, Yukon, 1899. (*Williams.*)

Subsp. **rupincola**, KINDB. Bry. Am. & Eur., p. 193.

Leaves subulate-acuminate; costa percurrent, serrulate at the back; perichetial leaves long, aristate, not emarginate.

On rocks three miles below Hector, Rocky Mountains, B.C., Aug. 13th, 1890. This specimen was referred to *D. spadicum* in Cat. Can. Musci, Pt. VI., 260. (*Macoun.*)

982. **D. pallidum**, BRUCH & SCHIMP.

Newfoundland. (*Waghorne.*)

116. **D. Drummondii**, C. MUELL.

Quite common and in fine fruit in woods throughout Algonquin Park, Ont., June, 1900; in rocky woods, Johnstone's Harbour, Bruce Peninsula, Ont., Aug. 22nd, 1901. (*Macoun.*)

117. **D. undulatum**, TURN.

In boggy woods at Edmonton, Ont., 1892. (*Jas. White.*) On earth in woods at Baddeck, Cape Breton Island, N.S., July, 1898; in swampy woods, Cache Lake, Algonquin Park, Ont., June, 1900. (*Macoun.*)

Subsp. **Ontariense**, KINDB.

Leaves less spreading, not recurved, strongly serrate only in the upper part of the acumen, capsule solitary.

The specimen on which this form is based was collected in thick woods at Wooler, Northumberland Co., Ont., Oct. 6th, 1888, and referred in Part VI., 28 to *D. majus*. (*Macoun.*)

118. **D. spurium**, HEDW.

On dry rocks, Halfway Brook, Cape Breton Island, N.S., Aug., 1898; common on sandy earth, Sable Island, N.S., Aug. 8th, 1899. (*Macoun.*)

983. **D. condensatum**, HEDW.

On dry sandy earth and almost pure sand at the bases of trees. Pelee Point, Essex Co., Ont., May 27th, 1901; quite common. (*Macoun.*)

936. **D. spadiceum**, ZETT.

On rocks or earth, Greenland. (*Berggren.*) On rocks, Mosquito Bay, Lat. 60° 42', Labrador, Aug., 1898. (*A. P. Low.*)

984. **D. Sphagni**, WAHLENBERG.

Newfoundland. (*Waghorne.*) On earth in a bog, Clearwater Lake, Labrador, July 31st, 1896. (*A. P. Low.*) Along Jupiter River, Anticosti, Que., Aug. 20th, 1883, included in Part VI. under *D. Bergeri*. (*Macoun.*)

22. **DICRANODONTIUM**, Bruch & Schimp.122. **D. longirostre**, BRUCH. & SCHIMP. Can. Cat. Musci, p. 35.

On damp earth on rocks at Louisburg, Cape Breton Island, N.S., Aug. 18th, 1898. (*Macoun.*) Along the Tay, York Co., N.B. (*J. Brittain.*) On earth, Port Etches, Alaska, June 18th, 1892. (*J. M. Macoun.*)

23. **CAMPYLOPUS**, Brid.123. **C. Schimperi**, MILDE.

Leptotrichum tomentosum, Kindb. Note on Can. Bryol.

On rocks, St. Paul Island, Behring Sea, July 3rd, 1892. (*J. M. Macoun.*)

24. **FISSIDENS**, Hedw.124. **F. bryoides**, HEDW.

On earth on a bank at Edmonton, Ont., Sept., 1892. (*Jas. White*.) On earth at Owen Sound, July, 1874, referred to *F. tamarindifolius* in Cat. Can. Musci, Pt. VI., 36. (*Macoun*.) Common on earth about Dawson, Yukon, 1899. (*Williams*.)

Var. **viridulus**, SWARTZ.

Fruiting stems without male flowers.

In woods at Comox and Victoria, Vancouver Island, June, 1893. (*Macoun*.)

125. **F. incurvus**, SCHWÆGER.

On stones in a dry brook at Edmonton, Ont., Aug. 1893. (*Jas. White*.) By a roadside at Comox, Vancouver Island, June, 1893. (*Macoun*.)

127. **F. limbatus**, SULLIV.

On the bank of a stream at Sicamous, B.C., July 3rd, 1889. Referred in Cat. Can. Musci, Pt. VI., 37, to *F. osmundoides*.

131. **F. osmundoides**, (Sw.) HEDW.

On earth on rock, Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898; on dead cedar roots, Island Lake, Algonquin Park, Ont., July, 1900. (*Macoun*.) On earth and rocks at Lake Lindeman, Yukon, 1899. (*Williams*.)

132. **F. adiantoides**, (LINN.) HEDW.

In a ravine at Whycocomagh, Cape Breton Island, N.S., July, 1883; on the shore of Shanigan Lake, Vancouver Island, 1893; on earth on rocks, Foster's Flats, Niagara River, Ont., May 16th, 1901. (*Macoun*.) In marshy places at Lake Lindeman, Yukon, 1899. (*Williams*.)

Var. **immarginatus**, LINDB.

In boggy soil, Jupiter River, Anticosti, Que., Aug., 1883. (*Macoun*.) On earth, Battle Harbour, Labrador; and Newfoundland. (*Waghorne*.) Within the spray of Kakabeka Falls, west of Lake Superior, Sept. 1889. (*Mrs. E. G. Britton*.)

Var. *instatus*, KINDB.

On old stumps subject to flood along Lake Duchesne above Britannia, six miles above Ottawa, Ont., Oct., 27th, 1900. (*Macoun.*)

133. *F. decipiens*, DE NOT.

F. adiantoides, Linn. var. *cristatus*, Wilson.

On boulders at Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898; on boulders at Belleville, Hastings Co., Ont., Oct., 1888. Recorded as a new variety in Cat. Can. Musci, Pt. VI., 37. Drummond's No. 110 referred to *adiantoides* also belongs here. On the bases of trees, Sudbury Junction, Ont., May, 1884; on the bases of stumps in a swamp at Wyoming, Lambton Co., Ont., June 14th, 1901. (*Macoun.*)

134. *F. subbasilaris*, HEDW.

On wet ledges half way up Mount McKay, Fort William, Lake Superior, Sept. 7th, 1887. (*Mrs. E. G. Britton.*) On cedar bark in woods at Carleton Place, Ont., May 12th, 1900. (*Macoun.*)

135. *F. grandifrons*, BRID.

On submerged limestone rocks in the Credit River at Credit Forks, Ont., Sept. 17th, 1892. (*Thos. Walker. Jas. White.*) On wet limestone rocks in a spring close to the Niagara River at Foster's Flats, Ont., May 16th, 1901. (*Macoun.*)

985. *F. Garberi*, LESQ. & JAMES, Mosses of N. America, p. 86.

On old stumps, subject to flood, along Lake Duchesne, above Britannia, six miles above Ottawa, Ont., Oct. 27th 1900. (*Macoun.*)

986. *F. Ravenelii*, SULLIV.; Lesq. & James Mosses of N. America, p. 85.

On earth in woods, Owen Sound, Ont., Sept. 14th, 1890. (*Macoun.*) Referred to *F. incurvus* in Part VI., p. 36.

26. *LEUCOBRYUM*, HAMPE.**137. *L. vulgare*, HAMPE.**

On Stony Lake, Peterboro', Co. Ont., Aug. 16th, 1892. (*Thos. Walker.*) On earth in a ravine, Big Intervale, Margaree, Cape

Breton Island, N.S.; on earth, Sable Island, N.S., July, 1899; Cache Lake, Algonquin Park, Ont., June, 1900; in woods Jordan Station, Lincoln Co., Ont.; woods, Queenston Heights, Ont.; on Pelee Point and Beach Ridge, Leamington, Essex Co., Ont., 1901. (*Macoun.*)

27. **CERATODON**, Brid.

138. **C. purpureus**, BRID.

On earth in woods and by roadsides, Cape Breton Island, N.S., July, 1898; on earth, Sable Island, N.S., July, 1899; quite common on the eastern slope of the Rocky Mountains, 1897. (*Macoun.*) Fort Chimo, Labrador, Aug., 1896. (*A. P. Low.*) On earth at Edmonton, Ont., May, 1892. (*Jas. White.*) On earth, Baffin Land, north shore of Hudson Strait, July, 1897. (*Dr. R. Bell.*) Juneau, also at Salmon Creek and Gold Creek Cañon near Juneau, Alaska; and at Nanaimo, Vancouver Island. (*Miss G. Cooley.*) Common on rock at Lake Lindeman, Yukon, 1899. (*Williams.*)

987. **C. Columbiæ**, KINDB., *Revue Bryol.*, 1896.

Leaves narrowly ovate-lanceolate subulate-acuminate, reflexed below the somewhat long serrulate acumen; costa generally excurrent. Inner perichetial leaves, one or two, with a somewhat long-linear or lingulate acumen. Capsule curved when dry, teeth with numerous articulations, broadly margined; lid short-conic obtuse or sub-convex; predicele red. Outer perigonal leaves with long-excurrent costa. Monœcious.

On earth at Kicking Horse Lake, Rocky Mountains, July, 1885; in woods at Revelstoke, B.C., 1889. (*Macoun.*) On earth, Chilliwack River, B.C., 1901. (*J. M. Macoun.*)

139. **C. conicus**, HAMPE.

This species includes *C. minor*, Austin, which was founded on specimens collected by the writer in 1875. See Cat. Can. Musci, Pt. VI., 39.

28. **TRICHODON**, Schimp.

141. **T. cylindricus**, SCHIMP.

On wet rocks, Half Way House, Cape Breton Island, N.S., August 5th, 1898. (*Macoun.*)

29. **DISTICHIUM, Bruch & Schimp.**142. **D. capillaceum**, (SWARTZ.) BR. & SCH.

On rocks, Fort Chimo, Ungava Bay, Labrador, Aug., 1896. (*A. P. Low.*) On damp rocks in ravines at the Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898; in damp rocky places along Jumping Pound Creek, Rocky Mountains, June, 1897; on hummocks in bogs north of the Saskatchewan at Prince Albert, Sask., July, 1896. (*Macoun.*) On earth and rock from Lake Lindeman to Dawson, Yukon, 1899. (*Williams.*)

143. **D. inclinatum**, (EHRH.) BR. & SCH.

On earth at Lake Lebarge, and on old stumps at Dawson, Yukon, 1897. (*Williams.*)

30. **SELIGERIA, Bruch & Schimp.**149. **S. campylopoda**, KINDB.

Quite common and in fine fruit on damp limestone rocks, Foster's Flats, Niagara River, Ont., May 16th, 1901. (*Macoun.*)

31. **BLINDIA, Bruch & Shimp.**150. **B. acuta**, (HUDS.) BRUCH & SCHIMP.

On wet rocks at Half Way Brook, Cape Breton Island, N.S., Aug., 1898. (*Macoun.*) Juneau, alt. 3,000 feet; also at Salmon Creek and Gold Creek Canon, near Juneau, Alaska. (*Miss G. Cooley.*) In fine fruit at Skagway, Alaska; sterile specimens at lakes Lebarge and Lindeman, Yukon. (*Williams.*)

988. **B. flexipes**, (REN. & CARDT.) KINDB.

Leaves as in *B. acuta*, but often falcate; costa denticulate above, short-excurrent. Perichetial leaves gradually acuminate. Capsule as in *B. acuta*; pedicel flexuous arcuate, yellow above. Tufts green or yellowish green.

On damp rocks in a ravine at Goldstream, and on sandstone rocks, Union Mines, Comox, Vancouver Island, June, 1893. (*Macoun.*) On rocks at Carmanah Point Vancouver Island; on rock, Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

34. **POTTIA, Ehrh.**154. **P. truncatula, LINN.**

Pottia truncata, Fuern. Cat. Can. Musci. 42.

On ground in open places at Edmonton, Ont., Nov. 5th, 1892.
(*Jas. White.*)

157. **P. Heimii, FUERN.**

On earth, Farewell Creek, Cypress Hills, Assa, June 27th, 1895.
(*Macoun.*)

158. **P. latifolia, var. pilifera, (BRID.) MUELL.**

On bare earth of the river bluff just below Dawson, Yukon,
1899. (*Williams.*)

35. **DIDYMODON, Hedw.**160. **D. rubellus, (HOFFM.) BRUCH & SCHIMP.**

On earth and rocks, Half Way Brook, Cape Breton Island N.S., Aug., 1898; on rocks, Moose Mountain, Rocky Mountains Alta., June, 1897; in a ravine at Woodstock, N.B., July, 1899. (*Macoun.*) Cañon City, Dyea Creek, Alaska; also common at Dawson, Yukon, 1899. (*Williams.*)

161. **D. Canadensis, KINDB.**

Newfoundland. (*Waghorne.*)

989. **D. subruber, KINDB. Revue Bryol. 1896.**

Leaves as in *D. rubellus*, but often dentate. Perichetial leaves long-subulate, not recurved. Capsule curved; lid rostrate. Diccious.

On rocks at Morley, Banff and "Dry Cañon," Devil's Lake, Rocky Mountains, Alta., Aug. 11th, 1891. (*Macoun.*)

162. **D. luridus, HORNSCH.**

On damp limestone rocks, Credit Forks, Ont., Sept., 1892.
(*Jas. White.*)

990. **D. trachyneuron, KINDB. BRYOL. N. Am. & Eur. 275.**

Leaves short-attenuate, subacute, brittle; costa pale, papillose at the back, sometimes excurrent. Tufts low, green. Capsules unknown.

On a large rock in a ravine at North Wakefield, Que., Sept. 12th, 1893. (*J. M. Macoun.*) On rocks at Owen Sound and Wiarton, Bruce Co., Ont., July, 1874. (*Macoun.*)

36. **LEPTODONTIUM, Hampe.**

165. **L. Canadensis, KINDB.**

In the Bryineæ of North America and Europe Dr. Kindberg re-describes this species and names it *Didymodon Macounii*, Kindb.

Mrs. E. G. Britton in Bull. Torr. Bot. Club, Vol. XXVII., p. 648, shows that this species is identical with *Pottia riparius*, Aust. and *Trichostomum Warn torfii*, Correns, while Dr. Kindberg brings them also together but makes two species out of the three keeping *Pottia riparius*, Aust. and *Trichostomum Warnstorffii*, Correns, under *Didymodon riparius*, Aust.

37. **DITRICHUM, Timm.**

LEPTOTRICHUM, Hampe.

991. **D. oblongum, (LINDB.) KINDB.**

On earth, Greenland. (*Berggren.*)

992. **D. giganteum, R. S. WILLIAMS.**

The author compares this species with large forms of *D. flexicaule* which approach it very closely. Sterile specimens, only, collected at Dawson, Yukon, 1899. (*Williams.*) Specimens of this species were collected by the "torrent" at Hector, Rocky Mountains, July 29th, 1885, and again on August 12th, 1890. These were referred to *flexicaule* in Part VI., Cat. Can. Musci., p. 46. (*Macoun.*)

166. **D. tortile (GMEL.) LINDB.**

On earth, Aroostook Falls, New Brunswick, Sept. 7th, 1899; on earth at South Indian, Carleton Place, Algonquin Park and Ottawa, Ont. (*Macoun.*)

Subsp. **pusillum, HEDW.**

Drummond's No. 118 and Prof. Fowler's specimen from New Brunswick referred to *tortile* in Cat. Can. Musci 45 belong here. Rather common by the roadside near the Mer Bleue, and at Rockcliffe, Ottawa, Ont. (*Macoun.*)

167. **D. vaginans**, (SULLIV.) HAMPE.

On earth by roadsides at Louisburg, Baddeck, Grand Narrows, and Margaree, Cape Breton Island, N.S., Aug. 1898. Rather common. (*Macoun.*)

168. **D. homomallum**, (HEDW.) HAMPE.

On earth by the roadside at Louisburg, Cape Breton Island, N.S., Aug. 18th, 1898. (*Macoun.*)

993. **D. elatum**, KINDB. Bryol. N. Am. & Eur. 181.

Leptotrichum flexicaule, var. *brevifolium*, KINDB. Cat. Can. Musci., 46.

169. **D. flexicaule**, (SCHLEICH.) HAMPE.

On rocks in a ravine, Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898. (*Macoun.*) Common about Dawson, Yukon, in swampy places. (*Williams.*)

Subsp. **densum**, (SCHIMP.) KINDB.

On rocks in the Crow's Nest Pass, Rocky Mountains, Aug., 1897. (*Macoun.*) Collected between the Big and Little Salmon rivers, Yukon, in good fruit, June 16th, 1899. (*Williams.*)

994. **D. suboblongum**, KINDB.

On rocks, Moose Mountain, Elbow River, Rocky Mountains, June 30th, 1897; summit of Tunnel Mountain, Banff, Rocky Mountains, Alta., July 6th, 1891. (*Macoun.*)

170. **D. pallidum** (SCHRIEBER) HAMPE.

In woods near Niagara Falls, Ont., June 27th, 1892, on earth in woods at Leamington, Essex Co., Ont.; also at Jordan Station, Lincoln Co., Ont., 1901. (*Macoun.*)

995. **D. Schimperi**, LESQ.

Leptotrichum Schimperi, Lesq.; Lesq. & James, Mosses of N. America, 108.

On earth along Shawnigan Lake and by ditches at Comox, Vancouver Island, 1893. (*Macoun.*)

171. **D. glaucescens**, (HEDW.) HAMPE.

On granite rocks, shore of Stony Lake, Peterboro' Co., Aug., 1892. (*Thos. Walker.*) On damp rocks, Algonquin Park, Ont., July 1900. (*Macoun.*)

38. **TRICHOSTOMUM**, Smith.940. **T. Vancouvericense**, (BROTH.) KINDB.

On earth in woods, near Victoria, Vancouver Island, May 6th, 1893. (*Macoun.*)

996. **T. anomalum**, SCHIMP.; Lesq. & James, Mosses of N. America, 110.

On earth in fields, Sea's farm, and on rocks Bu'nside Road, near Victoria, Vancouver Island, May, 1893. (*Macoun.*)

997. **T. indigena**, REN. & CARD., Botanical Gazette, Vol. XXII., p. 50.

Very small, gregarious, dirty green; stems scarcely 1--2 mm high. Leaves patent, subcirrate when dry, 1.25--1.75 mm. long, and oblong-lingulate, obtuse, apiculate or crenulate by the projection of the papillæ; costa stout, percurrent or vanishing just below the apex; cells minute, rotundate or subquadrate, densely papillose, becoming gradually larger, oblong, rectangular, pellucid and smooth toward the base. Perichetial leaves from an oblong and loosely reticulate base, linear-lingulate, obtuse or mucronate. Pedicel thin, reddish, paler above, 4--6 mm. long, slightly twisted to the left under the capsule when dry. Capsule small, erect, oblong-cylindrical, chestnut-colored, about 1 mm. long. Lid unknown. Annulus simple, teeth of the peristome purple, slightly twisting, on a narrow basilar membrane, segments filiform, minutely granulose, marked with a longitudinal line, articulate, slightly nodose and partly connected in the lower part. Probably dioecious (male flowers unseen).

Resembling the smallest form of *Barbula unguiculata*, Hedw., by the shape and areolation of the leaves, but well distinct by the peristome being much shorter and less twisted, the teeth describing scarcely half a spiral turn.

Newfoundland, 1895. (*Waghorne.*)

39. **DESMATODON**, Brid.173. **D. latifolius**, BRID.

On Unalaska Island, Behring Sea, Aug., 1891. (*J. M. Macoun.*)
On earth at Lake Louise, Rocky Mountains, Alta., Aug., 1891.
(*Macoun.*)

Var. **glacialis**, SCHIMP.; Lesq. & James, Mosses of N.
America, III.

Greenland. (*Berggren.*)

174. **D. Systilius**, BRUCH. & SCHIMP.

St. Paul Island, Behring Sea. (*Dr. Merriam.*)

175 **D. Porteri**, JAMES.

On flat limestone rocks, Foster's Flats, Niagara River, May
11th, 1901. (*Macoun.*)

178. **D. cernuus**, BRUCH & SCHIMP.

On earth at Dawson, Yukon, 1899. (*Williams.*)

998. **D. systilioides**, REN. & CARD., Botanical Gazette, Vol.
XXX., p. 16.

A full description in Latin is given besides the following which
is sufficient for our purpose.

By the lid attached to the columella and persistent after the
opening of the capsule, this species resembles *D. Systilius*, Schimp.,
but is clearly distinct from it by the leaves of a more obscure
and more papillose areolation, with a distinct pellucid yellowish
border, the nerve stouter, brownish, not or very shortly excurrent,
and by the total lack of peristome; at least none of the capsules
we have been able to examine show the slightest trace of this
organ. The pellucid border of the leaves shows some relation-
ship between *D. systilioides*, Ren. & Card., and *D. Porteri*, James,
but the latter has a much narrower capsule, with a highly conic
lid not adhering to the columella, and the peristome and annulus
are well developed.

L'Anse au Mort, Labrador, 1894. (*Waghorne.*)

41. **BARBULA**, Hedw.185. **B. brevirostris**, BRUCH & SCHIMP.

On earth-covered stumps and bare clayey soil about Dawson, Yukon, 1899. (*Williams.*)

187. **B. tortuosa**, (LINN.) WEB. & MOHR.

On limestone rocks, Credit Forks, Ont., Sept., 1892. (*Jas. White.*) On dry earth, Moose Mountain, Elbow River, Rocky Mountains, Alta., June, 1897; on rocks in a ravine at Margaree, Cape Breton Island, N.S., July, 1898; abundant and fruiting on rocks, Aroostook Falls, N.B., Sept., 1899; on sand under trees, Pelee Point, Essex Co., Ont., 1901. (*Macoun.*)

188. **B. inclinatula**, C. M. & KINDB.

Sterile specimens collected on limestone rocks along the Niagara River, near Queenston, Ont., May 13th, 1901, are doubtfully referred here. (*Macoun.*)

189. **B. fragilis**, (DRUMM.) WILS.

On earth, Jumping Pound Creek bridge, Alta., June, 1897. (*Macoun.*) On earth in damp shady places at Dawson, Yukon, 1899. (*Williams.*)

190. **B. cæspitosa**, SCHWÆGER.

Abundantly fruiting at the bases of trees in woods, Pelee Point, Essex Co., Ont., May 27th, 1901; on the bases of old stumps in a swamp at Wyoming, Lambton Co., Ont., June 14th, 1901. (*Macoun.*)

200. **B. fallax**, HEDW.

On earth, Parson's Mountain, near Victoria, Vancouver Island, May 15th, 1893. (*Macoun.*)

201. **B. recurvifolia**, SCHIMP.

A specimen collected in the Crow's Nest Pass, Rocky Mountains, Aug. 20th, 1897, was named by Kindberg *B. reflexa*, var. *virescens*, or a new species. I place it here for the present. (*Macoun.*) Growing in large tufts on rocks at Dawson, Yukon, 1899. (*Williams.*)

205. *B. spadicea*, MITT.

On earth near the Indian village, Comox, Vancouver Island, June, 1893. (*Macoun.*)

206. *B. unguiculata*, (HUDS.) HEDW.

On earth in ditches at Baddeck, Cape Breton Island, N.S., July, 1898; not rare on earth at Queenston, Ont. (*Macoun.*)

207. *B. brachyphylla*, SULLIV. var. *angustifolia*, KINDB. (N. var.)

Leaves ovate-lanceolate, broadly acuminate, subobtusate, nearly smooth, slightly reflexed or partly flat at the borders, crowded, appressed when dry; cells subpellucid, subquadrate; costa red and thick, principally above, percurrent. Capsules unknown. On calcareous rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C., June 8th, 1890. (*Macoun.*)

213. *B. circinnatula*, C. M. & KINDB.

This is a common species on Vancouver Island on damp or wet rocks. It has been collected at Craigflower, Goldstream, along the Colquitz River and other places near Victoria, and at Sooke, 25 miles to the southwest of it, 1893. (*Macoun.*)

214. *B. horridifolia*, C. M. & KINDB.

On damp rocks in the Eagle Pass, Gold Range, B.C., May 23rd, 1890; on wet rocks, Colquitz River near Victoria, Vancouver Island, 1893. (*Macoun.*)

215. *B. convoluta*, HEDW.

All eastern references found under this species in Cat. Can. Musci, 57, belong here. All western to the next species.

On limestone rocks, Credit Forks, Ont., Sept., 1892. (*Jas. White.*) On earth at Queenston Heights, Ont., May 8th, 1901. (*Macoun.*)

216. *B. chysopoda*, C. M. & KINDB.

This species is quite common on Vancouver Island, and is easily separated from *B. convoluta* by its long capsule and lid.

217. *B. subulata*, (LINN.) BEAUV.

On earth, Skull Creek, Crane Lake, Assa., June, 1894; on Bragg's Creek, Elbow River, Rocky Mountains, June, 1897; on earth on rock, Niagara River, Ont.; also on Pelee Point, Essex Co., Ont., 1901. (*Macoun.*) On earth in rather dry places at Dawson, Yukon, 1899. (*Williams.*)

218. *B. mucronifolia*, BRUCH & SCHIMP.

Crevices of limestone rocks, Rockcliffe Park, Ottawa, Ont., May, 1900. (*Macoun.*)

220. *B. ruralis*, (LINN.) HEDW.

On sand along the sea-beach at Comox, Vancouver Island, May 2nd, 1887; in sand under trees, Pelee Point, Essex Co., May, 27th, 1901. (*Macoun.*) On rocks, Unalaska Island, Behring Sea, Sept., 1892. (*J. M. Macoun.*) On rocks about lakes Lindeman and Bennett, Yukon, 1899. (*Williams.*)

222. *B. aciphylla*, BRUCH & SCHIMP.

All references to *B. aciphylla* in part VI. belong here, except that of Roger's Pass, which belongs to the next.

On earth by the Indian cemetery, Comox, Vancouver Island, June, 1893. (*Macoun.*)

999. *B. pseudo-aciphylla*, KINDB. in Hedwigia, 1896, 63.

Leaves long, sublinear-lingulate; obtuse; costa very rough above; hair-point red only at the base or in the upper half. Capsule narrower than in *B. norvegica*; peristome not seen.

On mountain slopes at discharge of Devil's Lake, Banff, Rocky Mountains, Alta., July 1st, 1891. (*Macoun.*)

223. *B. megalocarpa*, KINDB.

Our undoubted specimens of this species are :—

On rocks, Cypress Hills, Assa., Aug. 3rd, 1880; at Yale, B.C., July 17th, 1889; in Eagle Pass, near Revelstoke, B.C., May 13th, 1890; along Cadboro Bay and the Burnside Road, Victoria, Vancouver Island, 1887 and 1893. (*Macoun.*)

1000. *B. submegalocarpa*, KINDB. in Hedwigia, 1896, 64.

Differs from *B. ruralis*: Leaves longer, narrow and less reflexed above, from a broader base alternate or sublinear; outer

basal cells golden yellow; not porose; hair-point often red in the lower half. Peristome faintly contorted, shorter than the tube.

On damp rocks at Sicamous, B.C., July 4th, 1889. (*Macoun.*)

224. **B. lævipila**, BRUCH & SCHIMP.

On trees, Vancouver Island. (*Ræll.*)

227. **B. papillinervis**, C. M. & KINDB.

On rocks at Clearwater Lake, Labrador, Aug., 1898. (*A. P. Low.*)

944. **B. læviuscula**, KINDB.

On rocks in the Crow's Nest Pass, Rocky Mountains, Alta., Aug. 20th, 1897; at the base of trees near Victoria, Vancouver Island, May 17th, 1893. (*Macoun.*)

941. **B. vinealis**, BRAUN.

On banks by the sea at Comox, Vancouver Island, June, 1893. (*Macoun.*)

1001. **B. subcuneifolia**, KINDB., *Revue Bryol.* 1896.

Leaves suboval-ovate, sometimes acute or apiculate, slightly reflexed below, larger than in the last and not crisped; costa not excurrent, finally red-brown. Capsule as in the last; peristomial tube more prominent. Monœcious.

On rocks, St. Matthew's Island, Behring Sea, Aug. 10th, 1891. (*J. M. Macoun.*)

1002. **B. Waghornei**, KINDB., *Bryol. N. Am. & Eur.*, 264.

Leaves from a short ovate, half-sheathing base to a long acuminate, acute, entire point, slightly reflexed a little above the base, faintly curled when dry; costa red. Tufts brown-red radiculose. Habit of *Didymodon rubellus*.

Rather rare. Newfoundland. (*Waghorne.*)

BRYOBRIITTONIA, R. S. Williams, gen. nov.

Closely related to *Tortula* and *Desmatodon*, from which it is distinguished by the mamilllose leaves, the exposed surfaces of the very distinct cells being highly convex. From *Trichostomum* and *Timmiella* it is distinguished by the costa with only one

stereid band; the first of these also has the leaves smooth or papillose and the second has a leaf lamina of two layers of cells, mamilllose on the upper surface only.

This genus is dedicated to Mrs. Elizabeth G. Britton, by whose aid so many American students of our mosses have been encouraged.

1003. **B. pellucida**, R. S. WILLIAMS.

With much the habit of *Tortula latifolia* but leaves much longer and narrower above. Stems mostly simple, radiculose below, in loose, rather dark green tufts up to 2 cm. high, in cross-section irregularly oval (about .320 mm. long) with walls of two or three rows of slightly thickened irregular cells, ground tissue of large thin-walled cells, surrounding a distinct central strand of numerous small thin-walled cells. Terminal leaves (often enclosing numerous long paraphyses-like hairs) oblong-lanceolate, up to 7.5 mm. long and 1.5 mm. broad, plicate and somewhat crispate when dry or rarely nearly straight, mamilllose on both faces except dorsal side of costa, crenulate-serrate on flat borders in upper half, obtusely or somewhat acutely pointed, with stout costa (.140 mm. wide near base) long-decurrent on stems and vanishing several cells below apex. Lower leaves ovate-oblong (about 3 mm. long). Leaf cells above rhomboidal to hexagonal, about .016 mm. in diameter, becoming gradually elongated below and hyaline, the cells near margin a little above base .004--.006 mm. wide and up to .160 mm. long, toward costa .020--.025 mm. wide and up to .100 mm. or more long. Cross-sections of costa show in the ventral half about 4 guide-cells with a few accessory cells or even 1 or 2 rows of accessory cells nearly as large, in addition to the row of mamilllose cells on ventral surface. The dorsal half of costa consists of a stereid band, the outer row of cells a little larger than the others with a distinct central strand of small, irregular, thin-walled cells.

Yukon River bluff, just below Dawson, Yukon, April 16th, 1899. (*Williams.*)

43. **SCOULERIA**, Hook.

In an article by Mrs. E. G. Britton in Vol. XXIV., pp. 36-43 of the Torrey Bulletin the reader will find the three species given on pages 61-62 of part VI. of my Catalogue of Canadian Plants

fully discussed. In the article before me she reduces the three species to one and retains *S. aquatica* var. *nigrescens*, the original of *S. Nevii*, as regards my specimens. I fully agree with Mrs. Britton in her decision as I could see no reason for separating the plants when fresh except by their color.

No specimens of this species have been collected since the publication of Part VI.

232. *S. aquatica*, Hook.

Fine fruiting specimens collected near Cañon City. Dyea Creek, Alaska. As usual, in clear mountain streams, the plants are blackish and robust; also collected sterile specimens in Miles's Cañon and in fruit on the Yukon at Dawson, 1892. (*Williams*.) On rocks in Chilliwack River, B.C. (*J. M. Macoun*.)

44. GRIMMIA, Ehrh.

235. *G. conferta*, FUNCK.

On boulders on Moose Mountain, Rocky Mountains, Alta., June, 1897; on rocks by the Petewawa River, Algonquin Park, July 24th, 1900. (*Macoun*.) Marsh Lake, Yukon, 1899. (*Williams*.)

236. *G. velutina*, KINDB. Revue Bryol. 1896.

G. mannica, Cat. Can. Musci, 62.

Leaves broad-ovate, subobtuse, recurved all around and not carinate; cells subquadrate pellucid; hair-point rarely present. Tufts brown and velvet-like when dry, low as in *G. mannica*, but more compact. Capsules unknown.

On dry sun-baked rocks on the right bank of the Fraser River, beyond the bridge at Lytton, B.C., April 17th, 1889. (*Macoun*.)

237. *G. apocarpa*, HEDW.

On dry rocks, Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898. (*Macoun*.) On rocks at Credit Forks, Ont., 1892. (*Jas. White*.) Growing in blackish tufts on perpendicular rock walls at Lake Lindeman, Yukon. (*Williams*.)

238. *G. gracilis*, SLEICHER.

On granite rocks, Credit Forks, Ont., 1892. (*Jas. White*.) On rocks in ravines at Margaree, Cape Breton Island, N.S., 1898; on

rocks, Cascades, Gatineau River, Que., June, 1900; on rocks in a ravine at Woodstock, New Brunswick, July, 1899; on rocks, Petewawa River, Algonquin Park, Ont., July, 1900. (*Macoun.*) On rocks, Lake Lindeman, Yukon, 1899. (*Williams.*) On rocks, Chilliwack Valley, B.C. (*J. M. Macoun.*)

239. *G. rivularis*, NEES & HORNSCH.

On rocks near the water-line at Lake Lindeman, Yukon, 1899. (*Williams.*)

240. *G. alpicola*, SWARTZ.

On rocks along Peace River, below the mouth of Smoky River, Oct. 2nd, 1872. Referred in Part VI., p. 64, to *G. platyphylla*.

On wet rocks, Petewawa River, Algonquin Park, Ont., July, 1900. (*Macoun.*)

241. *G. platyphylla*, MITTEN.

On rocks along Jumping Pound Creek, Rocky Mountains, Alta., June, 1897. (*Macoun.*)

246. *G. heterophylla*, KINDB.

G. chloroblasta, Kindb., No. 245 Cat. Can. Musci., 64.

On rocks in Roger's Pass, Selkirk Mountains, B.C., July 31st, 1890. (*Macoun.*)

1004. *G. pseudo-rivularis*, KINDB., Bryol. N. Am. & Eur., 234.

Differs from *G. gracilis*. Leaves larger and broader, narrowed to a short-subulate point, patent when dry; cells less sinuous; costa, sub-excurrent rough only in the upper part. Capsule oval; teeth red; calyptra mitriform. Stem long-decumbent. Tufts green.

On rocks, Sydenham Falls, Owen Sound, Ont., Sept. 11th, 1890; also on rocks at Ottawa and at Brighton, Northumberland Co., Ont., Oct., 1888; on rocks along the Colquitz, near Victoria, Vancouver Island, May 22nd, 1893. (*Macoun.*)

Subsp. *lancifolia*, KINDB., Bryol. N. Am. & Eur., 234.

Leaves narrower and less acute sometimes with an obsolete rough hairpoint; costa not excurrent. Stem not long.

On rocks on Kadiak Island Alaska, Sept., 1891. (*J.M. Macoun.*)

On rocks at Meech's Lake, near Chelsea, Que., Sept., 30th, 1893 ; on rocks in the torrent at Hector, Rocky Mountains, B.C., Aug. 11th, 1890. (*Macoun.*)

1005. **G. pruinosa**, WILSON.

G. ambigua, Sulliv. ; Lesq. & James, Mosses of N. Am., 135.

On rocks along Bragg's Creek, Elbow River, Rocky Mountains, July, 1897 ; not uncommon at Banff, Devil's Lake, Kananaskis Pass and Kicking Horse Lake, Rocky Mountains, 1890 and 1891. (*Macoun.*)

249. **G. anodon**, BRUCH & SCHIMP.

On sandstone rocks, Cypress Hills, Assa., June, 1894 ; also on sandstone rocks, Wood Mountain, Assa., June, 1895 ; on rocks, Jumping Pound Creek and Crow's Nest Pass, Rocky Mountains, Alta., July, 1897 ; on rocks at Lytton, B.C., April 16th, 1889. (*Macoun.*)

250. **G. plagiopodia**, HEDW.

On rocks in the Crow's Nest Pass, Rocky Mountains, Alta., July, 1897. (*Macoun.*)

Subsp. **Brandegei**, (AUSTIN) KINDB.,

G. playiopodia, var. *pilifera*, Lesq. & James' Cat. Can. Musci., 65.

On sandstone rocks, Wood Mountain, Assa., June 10th, 1895. (*Macoun.*)

251. **G. nivalis**, KINDB.

G. tenerrima, Ren. & Card. ; Kindb. Bryol. N. Am. & Eur., 221.

On rocks, summit of Mount Benson, near Nanaimo, Vancouver Island, July 10th, 1893. (*Macoun.*)

257. **G. prolifera**, C. M. & KINDB.

On rocks, Newfoundland. (*Waghorne.*) On rocks at Pass Creek, Columbia River, B.C., June 20th, 1890 ; on rocks, Albert Cañon, Selkirk, Rocky Mountains, B.C., July 29th, 1890. (*Macoun.*) On rocks, Unalaska, Island, Behring Sea, June, 1897. (*J. M. Macoun.*)

258. *G. torquata*, HORNSCH.

On rocks in a ravine at Goldstream, Vancouver Island, June, 1893. (*Macoun.*) Sterile specimens were collected at Sheep Creek, Dyea Creek, Alaska; also at lakes Lindeman and Bennett, Yukon, 1899. (*Williams.*) On rocks, Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

259. *G. tortifolia*, KINDB., subsp. *pellucida*, KINDB. Bryol. N. Am. & Eur. 217.

Leaves larger and longer than the species, ovate-lanceolate, subacute, bright green; cells pale, pellucid, nearly all quadrate and not distinctly sinuous; costa pellucid. Capsules unknown. Tufts pale green when dry.

On rocks, Eagle Pass, Gold Range, B.C., May 23rd, 1890; also on Parson's Mountain, near Victoria, Vancouver Island, May 19th, 1893. (*Macoun.*)

263. *G. depilata*, KINDB.

On damp rocks at Esquimault and Parson's Mountain, near Victoria, Vancouver Island, 1893. (*Macoun.*)

1006. *G. Canadensis*, KINDB., Bryol. N. Am. & Eur. 226.

Leaves somewhat long, recurved below at both sides, flexuous when dry; middle cells rectangular, the upper subquadrate distinctly sinuous, the alar hyaline and very numerous. Capsule small and oval. Tufts of yellowish or brownish green 4—5 cm. high. Branches curved.

On rocks at Esquimault Harbour, near Victoria, Vancouver Island, May 13th, 1893. (*Macoun.*)

1007. *G. procera*, KINDB.

Leaves long, recurved nearly all around, nearly appressed when dry; cells yellow, the upper short and not or faintly sinuous, the alar few and the inner basal long; hair-point short and rough, sometimes wanting. Tufts brownish, stem 5—10 cm. high. Habit of *G. patens*.

On rocks, Parson's Mountain, near Esquimault, Vancouver Island, May 12th, 1893. (*Macoun.*)

266. **G. microtricha**, C. M. & KINDB.

On dry rocks at Revelstoke, B.C., May 7th, 1890. (*Macoun.*)

270. **G. ovata**, WEB. & MOHR.

On rocks, Clearwater Lake, Labrador, July 21st, 1896. (*A. P. Low.*) On rocks, Jumping Pound Creek, and on Moose Mountain, Rocky Mountains, Alta, June, 1897. (*Macoun.*) Lake Lindeman and Dawson, and at various intermediate points on the Yukon. (*Williams.*)

272. **G. calyptrata**, HOOK.

Coscinodon calyptratus, Hook.; Kindb., Bryol. N. Am. & Eur. 241.

1008. **G. arctophyla**, KINDB., Revue Bryol. 1896.

Leaves ovate-oblong, involute above, suberect when moist, appressed when dry, the uppermost not larger; basal cells generally short, the upper short and opaque; hair-point not long. Capsule suboblong brownish; lid apiculate; annulus indistinct; pedicel straight. Tufts cohering, generally blackish when dry. About 3 cm. high.

On rocks, Greenland. (*Berggren.*) On rocks, Paugan Falls, Gatineau River, Que., Aug. 24th, 1894. (*Macoun.*)

Subsp. **labradorica**, KINDB., Bryol. N. Am. & Eur. 221.

Tufts about 1 cm. high, brown-green. Inner (lower) basal leaf-cells long. Lid of capsule obliquely rostellate.

On rocks, Clearwater Lake, Labrador, July 21st, 1896. (*A. P. Low.*)

273. **G. commutata**, HUEBEN.

On rocks along the Gatineau River, Que., June 22nd, 1900. (*Macoun.*)

1009. **G. teretinervis**, LIMPRICHT.

On boulders usually covered with water in the Petewawa River, Algonquin Park, Ont., July 24th, 1900. (*Macoun.*)

1010. **G. tenuicaulis**, R. S. WILLIAMS, Bull. Torr. Bot. Club, XXVII; 316-317, 1900.

On rather dry rock walls at Dawson, Yukon, 1899. (*Williams.*)

1011. **G. ortholoma**, KINDB., Revue Bryol. 1896.

Leaves long, nearly appressed when dry; nearly all cells sinuous, middle one rectangular; hairpoint long and nearly smooth. Capsule very small; lid with a short conic or oblique beak. Tufts 1-2 cm. high. Leaves often with brown branched brood filaments.

1012. **G. Californica**, SULLIV.; Lesq. & James' mosses of N. America, 143.

Above the basin, Juneau, Alaska. (*Miss G. Cooley.*)

1013. **G. subflaccida**, KINDB., Ott. Nat., Vol. XIV., p. 85.

Agrees with the European *G. flaccida* (De Not.) Lindb., not found in America, in brittle orange peristome and channelled ovate-lanceolate, entire leaves with not distinctly sinuous cells; differs in the leaves being smaller, and recurved nearly all around, mucous or with a short and rough hair-point; also in the capsule being narrower. Lid and calyptra not seen.

On rocks at Edmondston, New Brunswick, Sept. 7th, 1899. (*Macoun.*)

1014. **G. compacta**, KINDB.

On sandstone rocks, Jumping Pound Creek, Rocky Mountains, Alta., June 12th, 1897. (*Macoun.*)

45. **RACOMITRIUM**, Brid.279. **R. aciculare**, (LINN.) BRID.

On wet rocks, Nagai Island, Alaska, Sept. 18th, 1892; on rocks, Chilliwack River, B.C., 1901. (*J. M. Macoun.*) On wet rocks in a brook at Aspy Bay, Cape Breton Island, N.S., Aug. 1898; also in the bed of a brook at Goldstream, Vancouver Island, 1893. (*Macoun.*) Juneau, Alaska, and at Gold Creek Cañon, near Juneau. (*Miss G. Cooley.*) Lake Lindeman, Yukon, 1899. (*Williams.*)

280. **R. Nevii**, C. MUELL.

On rocks, Chilliwack River, B.C., 1901. (*J. M. Macoun.*)

282. **R. Macounii**, KINDB.

On rocks on mountains, Chilliwack River, 1901. (*J. M. Macoun.*)

284. **R. robustifolium**, KINDB.*Grimmia robustifolia*, Kindb., Bryol. N. Am. & Eur., p. 225.

On damp rocks, Point Pleasant, Halifax, N.S., July 10th, 1899.
(*Macoun.*)

285. **R. Sudeticum**, (HEDW.) BR. & SCH.*Grimmia microcarpa*, (HEDW.) C. MUELL.

On rocks, Lake Lindeman, Yukon, 1899. (*Williams.*)

286. **R. heterostichum**, BRID.*Grimmia heterosticha*, (Hedw.) C. Muell.

Lake Lindeman, Yukon ; Skagway, Alaska. (*Williams.*)

Subsp. **micropoides**, KINDB., Bryol. N. Am. & Eur. 239.

Leaves pellucid with a very short hair-point; upper cells sometimes rectangular; alar cells hyaline. Capsule small, scarcely shorter than the pedicel.

On rocks, in Roger's Pass, Selkirk Mountains, B.C., July 30th, 1890; on rocks three miles below Hector, Rocky Mountains, B.C., Aug. 13th, 1890. (*Macoun.*)

288. **R. affine**, (SCHLEICH.) LINDB.

On rock, Unalaska Island, Behring Sea, August, 1891. (*J. M. Macoun.*)

289. **R. fasciculare**, (SCHRAD.) BRID.*Grimmia fascicularis*, (Schr.) C. Muell.

On rocks in ravines at Margaree, Smoky Mountain and Half Way Brook, Cape Breton Island, N.S., 1898. (*Macoun.*) Lake Lindeman, Yukon. (*Williams.*)

290. **R. varium**, MITTEN.*R. Oreganum*, Ren. & Card., Cat. Can. Musci, 75.

All references in Pt. VI. to No. 291 belong here.

Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

293. **R. microcarpum**, (SCHRAD.) BRID.*Grimmia ramulosa*, Lindb.

On rocks in a ravine at Margaree, Cape Breton Island, N.S., July, 1898. (*Macoun.*) On rocks, Seal Lake, Labrador, July, 1896. (*A. P. Low.*) Lake Lindeman, Yukon. (*Williams.*)

294. **R. hypnoides**, (LINN.) Willd.*R. lanuginosum*, Brid.; Cat. Can. Musci, 76.*Grimmia hypnoides*, (Linn.) Lindb.

On rocks, Nagai Island, Alaska, 1892. (*J. M. Macoun.*) Fort Chimo, Ungava Bay, and Whale River, Labrador, 1896; also Summit Lake, Manacuagan River, Que., 1895. (*A. P. Low.*) On earth on the "Bar" at South Ingonish and St. Ann's Harbour, Cape Breton Island, N.S., 1898. (*Macoun.*) On rocks, Baffin Land, north of Hudson Strait, July, 1897. (*Dr. R. Bell.*) Parry's Falls, Great Slave Lake, May 15th, 1900. (*J. W. Tyrrell.*) Lake Lindeman, Yukon. (*Williams.*)

295. **R. canescens**, (WEIS.) BRID.*Grimmia canescens*, (Timm.) C. Muell.

On stones and sand, Margaree, Cape Breton Island, N.S., 1898; on earth, Moose Mountain, Rocky Mountains, Alta., 1897. (*Macoun.*) On rocks, Fort Chimo, Ungava Bay, Labrador, 1896. (*A. P. Low.*) Near the snow line, above the basin, Juneau; also Davidson Glacier, Terminal Moraine, Pyramid Harbour, on the Sound near the shore, Alaska. (*Miss G. Cooley.*) Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*) Sheep Camp, Dyea Creek, Alaska, and Lake Lindeman, Yukon. (*Williams.*)

1015. **R. Panschii**, C. MUELL.On Sabine Island, Greenland. (*Pansch.*)1016. **R. tenuinerve**, KINDB., Revue Bryol. 1896.

Leaves longer-subulate than in *R. fasciculare*, carinate, yellowish green; cells narrow; costa faint, vanishing far below the apex; hair-point none. Stem long, sometimes without short branchlets. Pedicel 0.5 c.m. long. Calyptra not seen.

On rocks along the Columbia River at Revelstoke, B.C. May 19th, 1890. (*Macoun.*) St. Paul Island, Behring Sea, July 3rd, 1892. (*J. M. Macoun.*)

1017. **R. Palmeri**, KINDB., Revue Bryol. 1896.*R. microcarpum*, var. *Palmeri*, Kindb., Cat. Can. Musci, 268.

On rocks, mouth of Skeena River, B.C., May, 1892; on earth and rocks, St. Paul Island, Behring Sea, 1892. (*J. M. Macoun.*)

1018. **R. Jensenii**, KINDB., Revue Bryol. 1896.

Leaves small, broadly ovate-lanceolate, acute, blackish when dry; the upper with a short hair-point; upper cells short; costa brown, percurrent and papillose. Capsules unknown.

On rocks and sand, East Greenland, Aug. 5th, 1885. (*P. Eberlin.*)

1019. **R. depressum**, LESQ.

On rocks, Mosquito Bay, Labrador, Lat. 61° 25', Aug. 13th, 1898. (*A. P. Low.*)

46. **HEDWIGIA**, Ehrh.297. **H. albicans**, (WEBER.) LINDB.

H. ciliata, Ehrh., Cat. Can. Musci, 76.

On rocks, Clearwater Lake, Labrador, July, 1896. (*A. P. Low.*)
On rocks, Spanish Mills, Georgian Bay, and at Credit Forks, Ont. (*Jas. White.*) On dry boulders in woods, Margaree, Cape Breton Island, N.S., 1898; along Elbow River, Rocky Mountains, Alta., 1897; on rocks, C  che Lake, Algonquin Park, Ont., June, 1900; on rocks, Whirlpool Rapids, Niagara River, 1901. (*Macoun.*) Common about Dawson and Lake Bennett, Yukon. (*Williams.*)

Var. **subnuda**, KINDB.

On rocks, near Wooler, Ont., 1888; on boulders at Owen Sound and along the Sydenham River, Ont., Sept., 1890; on rocks, C  che Lake, Algonquin Park, Ont., July, 1900. (*Macoun.*)

Var. **leucoph  ea**, SCHIMP.

Juneau, Alaska. (*Miss G. Cooley.*)

51. **ZYGODON**, Hook. & Tayl.303. **Z. viridissimus**, (DICKS.) R. BR.

On oak trees, Victoria, Vancouver Island, May 17th, 1893. (*Macoun.*)

52. **AMPHORIDIUM**, Schimp.304. **A. Lapponicum**, SCHIMP.

Zygodon lapponicus. Hedw.; Kindb., Bryol. N. Am. & Eur. 316.

On wet rocks in a ravine at Margaree, Cape Breton Island, N.S., July, 1898; crevices of rocks, C  che Lake, Algonquin Park, June, 1900; in the Crow's Nest Pass, and at Lake Louise, Rocky Mountains, Alta., 1897; on damp rocks, Whirlpool Rapids, Niagara Falls, 1901. (*Macoun.*) On rocks, Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*) Lake Lindeman and Lake Marsh, Yukon. (*Williams.*)

Seben. decipiens, KINDB., Bryol. N. Am. & Eur. 317.

Perichetial leaves longer acuminate than in *A. lapponicus*; costa long excurrent.

On rocks at Asp., B.C., May 15th, 1889; Mount Benson, near Nanaimo, Vancouver Island, June 8th, 1887; and at Goldstream, Vancouver Island, June 2nd, 1893. (*Macoun.*)

305. **A. Mougeotii**, SCHIMP.

Zygodon Mougeotii, Bryol. Eur.; Kindb., Bryol. N. Am. & Eur. 316.

On damp rocks in a ravine at Margaree, Cape Breton Island, N.S., July, 1898; on rocks in the Crow's Nest Pass, Rocky Mountains, Alta., Aug., 1897. (*Macoun.*)

1020. **A. crispatus**, KINDB., Revue Bryol. 1896.

Leaves crisped, entire, with a longer acicular point than *A. Mougeotii*: the perichetial leaves are broader, long-sheathing and abruptly narrowed to the subulate shorter point.

The following specimens referred in Part VI. to *A. Mougeotii* and *Californicus* belong here.

On damp rocks, Pass Creek, Sproat, Columbia River, B.C., June 20th, 1890; on rocks, Eagle Pass, Gold Range, near Revelstoke, B.C., May 9th, 1890; on rocks at Yale, B.C., May 17th, 1889; on rocks at Sicamous, B.C., July 7th, 1889. (*Macoun.*)

306. **A. Californicum**, LESQ. & JAMES.

Zygodon californicus, Hampe; Kindb., Bryol. N. Am. & Eur., 316.

1021. **A. Sullivantii**, LESQ. & JAMES, Mosses of N. America.
Zygodon Sullivantii, C. Muell. ; Kindb., Bryol. N. Am. &
Eur., 315.

On wet rocks Halfway Brook, Cape Breton Island, N.S., Aug.
4th, 1898. (*Macoun.*)

53. **DRUMMONDIA**, Hook.

1022. **D. Canadensis**, KINDB., Revue Bryol., 1896.
D. clavellata, Hook. var. *Canadensis*, Kindb., Cat. Can.
Musci, 81.

Differs from *D. clavellata*. Leaves generally sub-obtuse, chan-
nelled, distinctly involute at the borders all around. Perichetial
leaves broader, more obtuse ; nearly all cells lax and long-rectan-
gular. Capsule globose a little larger ; lid short-rostrate. Tufts
sometimes brown. Monœcious. Nearly allied to *D. obtusifolia*.
C Muell, Chili.

54. **ULOTA**, Mohr.

309. **U. Drummondii**, BRID.
Weissia Drummondii, (Hook & Grev.) Lindb.

On trees and roots, Big Intervale, Margaree, and on rocks,
Halfway Brook, Cape Breton Island, N.S., 1898. (*Macoun.*)
On trees, Chilliwack Valley, B.C., may be a new species. (*J. M.*
Macoun.) On bark of *Alnus* at Sheep Camp, Dyea Creek, Alaska.
(*Williams.*)

310. **U. Ludwigii**, BRID.

On trees at Baddeck and Margaree, Cape Breton Island, N.S.,
July, 1898. (*Macoun.*) On old fences at Edmonton, Ont., 1892.
(*Jas. White.*) On trees in woods at Ottawa, Ont., on trunks,
Algonquin Park, Ont., June, 1900. (*Macoun.*)

312. **U. Bruchii**, HORNSCH.
Weissia Bruchii (Hornsch.) Lindb.

On rocks at Sheep Camp, Dyea Creek, Alaska ; and Lake
Lindeman, Yukon, 1899. (*Williams.*)

318. **U. crispa**, BRID.

Orthotrichum ulophyllum, Ehrh. ; Kindb., Bryol. N. Am. & Eur., 307.

Weissia ulophylla, (Ehrh.) Lindb.

On trees in woods at Margaree, Cape Breton Island, N.S., July, 1898 ; on spruce and fir trees at Ottawa, Ont. ; on trees at Sudbury Junction, Ont., 1884. (*Macoun.*) Sheep Creek, Juneau, Alaska. (*Miss G. Cooley.*)

319. **U. intermedia**, SCHIMP.

Orthotrichum ulophyllum intermedium, Schimp., Kindb., Bryol. N. Am. & Eur., 307.

On trees at Baddeck, Cape Breton Island, N.S., July, 1898. (*Macoun.*) On *Populus* and *Alnus* at Sheep Camp, Alaska, 1899. (*Williams.*)

320. **U. crispula**, BRID.

On beech trees at Edmonton, Ont., Sept., 1892. (*Jas. White.*) Sitka, Alaska. (*Miss G. Cooley.*) On trees in woods, Pelee Point, Essex Co., Ont., 1901. (*Macoun.*)

321. **U. phyllantha**, BRID.

Orthotrichum jutlandicum, Brid. ; Kindb., Bryol. N. Am. & Eur. 307.

Weissia phyllantha, (Brid.) Lindb.

On trees, South West Point, Anticosti, Que., Aug. 22nd, 1883 ; on trees at Gaspé Basin, Que., July 8th, 1882. This species was found fruiting at Louisburg, Cape Breton Island, N.S., July 17th, 1883. (*Macoun.*) On rocks just above tidewater at Skagway, Alaska. (*Williams.*)

322. **U. maritima**, C. M. & KINDB.

On rocks by the sea near Esquimaux, Vancouver Island, and on an old wharf at Comox, V.I., 1893 ; on boulders in the Margaree River, Big Intervale, Cape Breton Island, N.S., July 16th, 1898. (*Macoun.*) Middleton Island, Alaska, Lat. 59° 30', Aug. 1892. (*J. M. Macoun.*)

324. **U. Barclayi**, MITT.

Nagai Island, Alaska, Sept. 1st, 1892. (*J. M. Macoun.*)

325. **U. connectens**, KINDB.

On beech trees at Edmonton, Ont., 1893. (*Jas. White.*) On trees at Port Dover, Lake Erie, Ont., Sept., 1890. (*Macoun.*) Specimens collected on rocks at Michipicotin, Lake Superior, on July 25th and 26th, 1869, were carefully examined by Mrs. E. G. Britton and doubtfully referred to *U. curvifolia*. It is probable that this species (*curvifolia*) will be found yet, in profusion along the northeast shore of Lake Huron.

My opinion coincides with Mrs. Britton that both *Ulotia connectens* and *U. camptopoda* are young states of either *U. crispa* or *crispula*. I have looked for these species in summer, but have never found them except in the autumn. At this time the old capsule may be seen and great numbers of the young ones showing the very hairy calyptra.

55. **ORTHOTRICHUM**, Hedw.326. **O. anomalum**, HEDW.

On limestone rocks along the Ottawa at Rockcliffe and Hull, Que.; on perpendicular rock, Foster's Flats, Niagara River, 1901. (*Macoun.*) On rocks, Skagway, Alaska, in fine fruit, June 29th, 1899; on rock at Dawson, Yukon. (*Williams.*)

327. **C. Blyttii**, SCHIMP.

O. Pylaisii, Brid ; Kindb., Bryol. N. Am. & Eur. 301.

On rocks near the sea, Newfoundland ; L'Anse-au-Clair, Labrador. (*Waghorne.*)

Subsp. **arcticum**, SCHIMP.

On rocks, Kadiak Island, Alaska, and St. Paul Island, Behring Sea, 1891. (*J. M. Macoun.*)

Subsp. **microblephare**, SCHIMP.; Kindb., Bryol. N. Am. & Eur. 302.

St. Paul Island, Behring Sea, 1891. (*Dr. Merriam.*)

It is more than probable that the present subspecies and the preceding are the same, but which is the correct one we are not prepared to say.

1023. **O. Kingii**, LESQ.; LESQ. & JAMES, Mosses of N. America, 170.

O. Macounii, Aust., Bull. Torr. Bot. Club, Vol. VI, 343.

On rocks, Deer Park, Lower Arrow Lake, Columbia River. Referred to *O. laevigatum* in Part VI., p. 87; on rocks, Kicking Horse Pass, Rocky Mountains, B.C., Aug. 13th, 1890. (*Macoun.*) On rocks at Dawson, Yukon, 1899. (*Williams.*)

330. **O. cupulatum**, HOFFM.

On limestone rocks, Rockcliffe Park, Ottawa, Ont., 1891; on rocks, Moose Mountain, Elbow River, Rocky Mountains, Alta., 1897. (*Macoun.*)

1024. **O. Porteri**, AUST., Bull. Torr. Bot. Club, Vol. VI., 341.

On dry limestone rock, by the stairs leading down the cliff to Foster's Flats, Niagara Falls, Ont., May 16th, 1901. (*Macoun.*)

1025. **O. Lescurii**, AUST.

O. cupulatum, Hoffm. var. *minus*, Sulliv.; Cat. Can. Musci, 87.

On dry rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C., June 7th, 1890. (*Macoun.*)

1026. **O. Douglasii**, DUBY.; LESQ. & JAMES, Mosses of N. America, 167.

On rocks at Kicking Horse Lake, Rocky Mountains, July 29th, 1885; on rocks, mountain slopes at Spence's bridge, B.C., May 28th, 1889. (*Macoun.*) Referred to *O. cupulatum* in Part VI., p. 87.

336. **O. rupestre**, SCHLEICH.

On rocks in a ravine at the Big Intervale, Margaree, Cape Breton Island, N.S., 1898; on rocks, Moose Mountain, Elbow River, Rocky Mountains, 1897. (*Macoun.*) Lake Lindeman, Yukon, 1899. (*Williams.*)

337. **O. affine**, SCHRAD.

On trees at Baddeck, Cape Breton Island, N.S., July, 1898. (*Macoun.*)

Subsp. **fastigiatum**, BRUCH.

Leaves shorter-acuminate and less papillose than in *O. affine*. capsule suboval; calyptra nearly glabrous. Tufts usually pulvinate and about 1 cm. high. Habit of *O. pumilum*. On trees in woods, Big Intervale, Margaree, Cape Breton Island, N.S., July 16th, 1898. (*Macoun.*)

338. **O. alpestre**, HORNSCH.

On rocks, Moose Mountain, Elbow River, Rocky Mountains, Alta., alt. 6500, July 3rd, 1897. (*Macoun.*) On rock at Lake Marsh and Dawson, Yukon. (*Williams.*)

339. **O. speciosum**, NEES.

On trees and old rails at Brighton and Seymour, Northumberland Co., Ont., 1893. (*Macoun.*) On trees at Edmonton, Ont. (*Jas. White.*) On cottonwood at Skagway, Alaska, 1899. (*Williams.*)

343. **O. Ohioense**, SULLIV. & LESQ.

On poplar and birch trees at Edmonton, Ont. (*Jas. White.*) On old fence rails at Brighton, Northumberland Co., Ont., 1893; on trunks, Algonquin Park, Ont., June, 1900. (*Macoun.*)

344. **O. Schimperii**, HAMM.

On trees at Sandwich, Essex Co., Ont., May 24th, 1892; on trees in sandy woods, Pelee Point, Essex Co., May 27th, 1901 (*Macoun.*) On poplar trees at Brampton, Ont., June 23rd, 1892. (*Thos. Walker.*)

348. **O. consimile**, MITT.

On rocks near the sea, Victoria Arm, Victoria, Vancouver, Island, May 31st, 1893, (*Macoun.*)

Subsp. **anomaloides**, KINDB.

Capsule less exerted than in the species; cilia shorter than the teeth. Stem taller.

On rocks in woods at Banff; on damp rocks, Kananaskis Falls, and east end of Devil's Lake, all referred to *O. anomalum* in Part VI., p. 86.

350. **O. Røellii**, VENTURI.

On rocks, Moose Mountain, Elbow River, Rocky Mountains, Alta., July, 1897. (*Macoun.*)

351. **O. psilothecium**, C. M. & KINDB.

On trees at Ottawa and on old fence rails at Carleton Place, Carleton Co., Ont. (*Macoun.*)

356. **O. pulchellum**, BRUNTON, subsp. **ulotæforme**, REN. & CARD.; Kindb., Bryol. N. Am. & Eur. 309.

Leaves distinctly crisped. Peristome pale.

On trees at New Westminster Junction, B.C., April 26th, 1889; also on Cedar Hill, near Victoria, Vancouver Island, May, 1887. Referred in Part VI., p. 91, to *O. pulchellum*.

1027. **O. Winteri**, SCHIMP.

On *Spiræa discolor* at Victoria, and on trees, Burnside I and Parson's Mountain, near Esquimaux, Vancouver Island, ... 1893. (*Macoun.*)

358. **O. obtusifolium**, SCHRAD.

On trees at Edmonton, Ont. (*Jas. White.*) On poplar trees, Big Intervale, Margaree, Cape Breton Island, N.S., 1898; on *Negundo aceroides* at Old Wives' Creek, Assa., 1895; on balsam poplar, Jumping Pound Creek, Rocky Mountains, Alta., 1897. (*Macoun.*) On cottonwood at Skagway, Alaska, 1899. (*Williams.*)

359. **O. Jamesianum**, SULLIV.

On rocks, Crow's Nest Pass, Rocky Mountains, Alta., Aug. 3rd, 1897. (*Macoun.*)

360. **O. papillosum**, HAMPE; KINDB., Bryol. N. Am. & Eur. 304.

All references in Part VI., p. 92 to *O. Lyellii* and varieties belong here.

Subsp. **strictum**, VENTURI.

Leaves dark green, shorter, appressed when dry.

On trees on Sea's Farm, near Victoria, Vancouver Island, May 8th, 1893. (*Macoun.*)

1028. **O. lyellioides**, KINDB., Revue Bryol. 1896.

Leaves long as in *O. papillosum*, nearly flat or undulate at the borders, faintly papillose, not appressed when dry; the upper crisped. Capsule narrow-cylindric, pale brown and nearly wholly exserted, pedicel somewhat long. Tufts dark green, blackish below, somewhat tall.

On trees at Comox, Vancouver Island, May 3rd, 1887. (*Macoun.*)

361. **O. Canadense**, BRUCH & SCHIMP.

The Ottawa specimens of this species were placed in Pt. VI. under *O. Schimper*, but were changed to *O. Canadense* by Mrs. E. G. Britton when monographing the genus some years since.

1029. **O. Venturi**, KINDB.

On cedar rails at Brighton, Northumberland Co., Ont., Oct. 4th, 1893. (*Macoun.*)

1030. **O. subsordidum**, KINDB. (N. Sp.)

On rocks, Moose Mountain, Elbow River, Rocky Mountains, Alta., June 30th, 1897. (*Macoun.*)

1031. **O. gymnostomum**, BRUCH.

On trees, Newfoundland. (*Waghorne.*)

1032. **O. Bolanderi**, SULLIV.; Lesq. & James, Mosses of N. America, 168.

On rocks along Bragg's Creek, Rocky Mountains, Alta., July 9th, 1897. (*Macoun.*)

1033. **O. Watsoni**, JAMES; Lesq. & James, Mosses of N. America, 168.

On rocks, Moose Mountain, Elbow River, Rocky Mountains, Alta., July, 1897. (*Macoun.*)

NOTE.

Attention may be called here to two very valuable papers on the preceding genus written by Mrs. E. G. Britton. These papers were published in the Bulletin Torrey Botanical Club, Vol. XX., pp. 393-405, 1893, and Vol. XXI., pp. 1-15, 1894. They are im-

portant contributions to a difficult subject but a number of questions were left open that if now settled would add immensely to their value.

The same critical writer in Vol. XXII., pp. 452-458 of the Torrey Bulletin, discusses the genus *Leersia* (*Encalypta*) and more particularly the species, *E. Macounii*, Austin, and *E. ciliata*, Hedw. Without entering into the controversy I may say that before Austin described *E. Macounii* I thought it was a young state of *E. ciliata*. After many years in 1887 I sent specimens collected at Wellington mine near Nanaimo to Dr. Kindberg, and these he named *E. Macounii*, and later, eastern specimens were sent him, all of which he pronounced *E. Macounii*. At the date of the publication of Part VI. of my Catalogue of Canadian Plants, in 1892, he decided that up to that time he had seen no true *E. ciliata* from America.

In the article cited Mrs. Britton takes the ground that our eastern *Encalypta* which Kindberg has referred to *E. Macounii* is identical with authentic specimens of *E. ciliata* received from Europe, cited and examined by Limpricht.

Dr. Kindberg in European and North American Bryineæ, published in 1897, seems to stand by what he wrote in 1892. In giving the range of *E. Macounii* and *E. ciliata* on page 297 of the work referred to he credits *E. Macounii* to both Europe and America, while *E. ciliata* is only cited from Europe and Greenland.

Without prejudice I may observe that from the standpoint of a layman we in America have been making two species out of one while our friends in Europe were making one species out of two.

56 **ENCALYPTA, Schreb.**

362. ***E. commutata***, NEES & HORNSCH.

E. alpina, Smith, 1805; Kindb., Bryol. N. Am. & Eur. 296.

On earth at the "Gap," Crow's Nest Pass, Rocky Mountains, Alta., Aug. 13th, 1897. (*Macoun.*)

364. ***E. rhabdocarpa***, SCHWÆGER.

Leersia rhabdocarpa, (Schwæg.) Lindb.

On earth along Bragg's Creek, Rocky Mountains, Alta., June 28th, 1897. (*Macoun.*) On earth at Dawson, Yukon, 1899. (*Williams.*)

365. **E. subspathulata**, C. M. & Kindb.

On earth along Farewell Creek, Cypress Hills, Assa., June 27th, 1895. (*Macoun.*)

370. **E. longipes**, MITTEN.

On earth, Moose Mountain, Elbow River, Rocky Mountains, June 30th, 1897. (*Macoun.*)

372. **E. Selwyni**, AUST.

Leersia Selwyni (Aust.), E. G. Britt.

Lake Marsh, and also common about Dawson, Yukon, 1899. (*Williams.*)

373. **E. streptocarpa**, HEDW.; Cat. Can. Musci, 96.

E. contorta (Wulfen.) Lindb.; Kindb., Bryol. N. Am. & Eur. 293.

Quite rare on rocks in a ravine at Margaree, Cape Breton Island, N.S., July 14th, 1898; on earth along the Bonnechere River, near Golden Lake, Ont., Sept., 1900. (*Macoun.*)

1034. **E. sub-brevicolla**, KINDB., N. Sp.

Leaves oblong-linguate, obtusate, undulate not recurved, entire, generally obtuse; hair-point whitish. Perichetial leaves sub-oblong, acuminate. Capsule brownish with a very short neck; teeth whitish when moist, palish red when dry; calyptra somewhat long with a hispid beak, fringed when young.

On rocks at Seal Lake, northern Labrador, Aug. 3rd, 1896. (*A. P. Low.*)

1035. **E. Labradorica**, KINDB. (N. sp.)

Leaves subovate, obtuse or subacute, entire, not recurved; hair-point whitish, or at the base yellowish. Capsule brownish with a distinct neck; teeth brown yellow; calyptra short, faintly rough, not fringed.

On rocks, Fort Chimo, Ungava Bay, Labrador, Aug. 30th, 1896. (*A. P. Low.*)

57. **GEORGIA, Ehrh. TETRAPHIS, Hedw.**376. **G. pellucida, (LINN.) RABENHOST.***Tetraphis pellucida*, Hedw.; Cat. Can. Musci, 97.

On old logs, Big Intervale, Margaree, and on stumps Halfway Brook, Cape Breton Island, N.S., Aug. 1898; on old logs, Bragg's Creek, Elbow River, Rocky Mountains, Alta., June, 1897; on old stumps, C  che Lake, Algonquin Park, Ont., June, 1900. (*Macoun.*) Lake Lindeman, Yukon, 1899. (*Williams.*)

1036. **G. cuspidata, KINDB., Revue Bryol. 1893.**

Leaves subovate, short-acuminate, acute. Perichetial leaves cuspidate by the long excurrent costa. Capsule generally curved; pedicel straight.

On old logs at Leamington, Essex Co., Ont., Sept. 22nd, 1890. (*Macoun.*)

1037. **G. trachypoda, KINDB., Revue Bryol. 1893.**

Leaves subovate or ovate-oblong, short-acuminate and acute. Perichetial leaves with long, sublinear, acute acumen; costa not excurrent. Capsule straight; pedicel straight, rough in the upper part.

On an old stump at Sicamous, B.C., July 4th, 1889. (*Macoun.*)

377. **G. geniculata, (GIRGENS.) LINDB.***Tetraphis geniculata*, Girgens; Cat. Can. Musci, 97.

On old logs, Big Intervale, Margaree, Cape Breton Island, N.S., July 16th, 1898. (*Macoun.*) Salmon Creek near Juneau, Sitka. (*Miss G. Cooley.*) Ca  on City, Dyea Creek, Alaska, 1899. (*Williams.*)

59. **SCHISTOSTEGA, Mohr.**378. **S. osmundacea, WEB. & MOHR.**

On the earth clinging to the roots of turned up stumps, Perley Lake, Algonquin Park, Ont., July 21st, 1900. (*Macoun.*)

60. **DISSODON, Grev. & Arn.**379. **D. Fr  lichii, (HEDWIG.) G. & A.**

On mount Forget-me-not, Elbow River, Rocky Mountains, alt. 7500 feet, Alta., July 14th, 1897. (*Macoun.*)

381. **D. splachnoides**, (THUNB.) GREV. & ARN.

A few specimens found growing on damp earth by the margin of a pond at Lake Lindeman, Yukon, 1899. (*Williams.*)

61. **TAYLORIA**, Hook.383. **T. tenuis**, (DICKS.) SCHIMP

On cow's dung in woods near Baddeck, Cape Breton Island, N.S., July 8th, 1898.

384. **T. splachnoides**, Hook.

On earth on mountains, Chilliwack River, B.C., 1901. (*J. M. Macoun.*)

62. **TETRAPLODON**, Bruch & Schimp.386. **T. angustatus**, (L. FIL.) BR. & SCH.

On dung, Mount Forget-me-not, Elbow River, Rocky Mountains, Alta., alt. 6500 feet, July 14th, 1897. (*Macoun.*) Growing on bones in woods at Dawson, May 7th, 1899. (*Williams.*)

387. **T. bryoides**, (ZOEGL.) LINDB.

T. mnioides (L. F.) BR. & SCH.

Unalaska Island and St. Paul Island, Behring Sea, June, 1892. (*J. M. Macoun.*) Fort Chimo, Ungava Bay, Labrador, Aug. 1896. (*A. P. Low.*) On dung, Jumping Pound Creek, Rocky Mountains, Alta., June, 1897. (*Macoun.*) North shore of Hudson Strait, Baffin Land, 1897. (*Dr. R. Bell.*) On earth, Chilliwack Valley, B.C.; these specimens are var. *Breweri*. (*J. M. Macoun.*)

389. **T. urceolatus**, (BRID.) BR. & SCH.

On bones near the summit of Moosehide Mountain, just back of Dawson, Yukon, 1899. (*Williams.*)

63. **SPLACHNUM**, Linn.390. **S. Wormskioldii**, HORNEM.

Haplodon Wormskioldii, (Hornem.) Kindb., Bryol. N. Am. & Eur., p. 173.

St. George Island, Behring Sea, July 15th, 1892. (*J. M. Macoun.*) Seal Island, Labrador, 1900. (*E. B. Delabarre.*)

393. **S. ampullaceum**, LINN.

On earth and cow's dung in woods at Baddeck, Cape Breton Island, N.S., July 8th, 1898; on dung in a peat swamp, Catfish Lake, Algonquin Park, Ont., July, 1900. (*Macoun.*)

65. **PHYSCOMITRIUM**, Brid.402. **P. turbinatum**, C. MUELL.

Very abundant on earth below Queenston Heights and within the spray of Niagara Falls, Ont., above the Power House, and on earth in the flower border close to the falls, May 16th, 1901. (*Macoun.*)

1038. **P. acuminatum**, (SCHLEICH.) BR. & SCH.

On earth in woods at Wyoming, Lambton Co., Ont., June 14th, 1901. In very fine fruit. (*Macoun.*)

Following the advice of Mrs. E. G. Britton, I gave more than usual attention to *Physcomitrium* last season and was enabled to add an additional species to our flora and widen the range of *P. turbinatum* very much.

66. **FUNARIA**, Schreb.403. **F. calcarea**, WAHL.

On bare earth of the river bluff below Dawson, Yukon, 1899. (*Williams.*)

404. **F. hygrometrica**, SIBTH.

On earth at Baddeck, Cape Breton Island, N.S., July, 1898; in railway cuttings, Algonquin Park, Ont., 1900; abundant around Niagara Falls, 1901. (*Macoun.*) Lake Marsh and near Dawson, Yukon. (*Williams.*) On earth, Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

Var. **arctica**, BERGGREN.

Along the Lower Klondike River, Yukon. The specimens are mostly from 12 to 20 mm. high. (*Williams.*)

67. **BARTRAMIA**, Hedw.406. **B. subulata**, BRUCH & SCHIMP.

B. viridissima, Brid.; Kindb., Bryol. N. Am. & Eur. 323.

On rocks, Unalaska Island, Behring Sea, Aug., 1892. (*J. M. Macoun.*)

407. **B. ithyphylla**, BRID.

On rocks, St. Paul Island, Behring Sea, Aug., 1892. (*J. M. Macoun.*) On rocks, Moose Mountain, Elbow River, Alta., Aug., 1897. (*Macoun.*) At Seal Lake, northern Labrador, July, 1896. (*A. P. Low.*) By Lake Lindeman, Yukon, 1899. (*Williams.*)

408. **B. Cederi** (GUNNER) SWARTZ.

Crevices of rocks, Credit Forks, Ont., Sept., 1893. (*Jas. White.*) On rocks, Crow's Nest Pass, Rocky Mountains, Alta., Aug., 1897; on rocks in a ravine, Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898. (*Macoun.*) At Dawson, Yukon, 1899. (*Williams.*)

409. **B. pomiformis**, HEDW.

Shady moist bank in woods, Edmonton, Ont., 1892. (*Jas. White.*) Damp rocks, west of Hull, Que.; Cache Lake, Algonquin Park, 1900; on earth, Queenston Heights, Ont., May, 1901; Goldstream, near Victoria, Vancouver Island, 1893. (*Macoun.*) Juneau, alt. 3,000 feet; also at Salmon Creek and Gold Creek Cañon, near Juneau, Alaska. (*Miss G. Cooley.*) Cañon City and Sheep Creek, Dyea Creek, Alaska, 1899. (*Williams.*) On rock, Chilliwack River, B.C., 1901. (*J. M. Macoun.*)

1039. **B. crispa**, SWARTZ.

B. pomiformis, var. *crispa*, Schimp.; Lesq. & James, Mosses of N. America, 206.

On rocks, Placentia Bay, Newfoundland, July 25th, 1891. (*Waghorne.*) On earth in a ravine, Grand Narrows, and at Big Intervale, Margaree, Cape Breton Island, N.S., July 27th, 1898.

410. **B. glauco-viridis**, C. M. & Kindb.

On rocks at Meech's Lake, near Chelsea, Que., Sept., 1893; on rocks on Sea's farm, near Victoria Vancouver Island, May, 1893 (*Macoun.*)

1040. **B. breviseta**, LINDB., subsp. **rigidula**, KINDB.

On rocks, Greenland. (*Lange.*)

68. **CONOSTOMUM**, Swartz.414. **C. boreale**, SWARTZ.

On rocks, Seal Lake, northern Labrador, Aug., 1896. (*A. P. Low.*) Growing in dense cushions on wet rock, near Long Lake, between Chilcoot Pass and Lake Lindeman, Yukon. (*Williams.*)

69. **PHILONOTIS**, Brid.415. **P. marchica** (WILLD.) BRID.

In Part VI., on page 106, *P. Macounii* was placed as a synonym under this species. Later investigations have shown that the western specimens are really distinct from the eastern and are as they were first placed under *P. Macounii*.

In a railway ditch above Leamington, Ont., 1901. (*Macoun.*)

416. **P. fontana**, BRID.

On Smoky Mountain and at Margaree, Cape Breton Island, N.S., 1898; springs by Dow's swamp, Ottawa, Ont., and in the beaver meadow, Hull, Que., 1900; in damp woods by Drummond's Island, Niagara Falls, Ont., May, 1900. (*Macoun.*) St. Paul Island, Behring Sea. (*Dr. Merriam.*) Near the snow line, above the Basin, Juneau, Alaska. (*Miss G. Cooley.*) Rather common about Lake Lindeman and Lake Bennett, Yukon, 1899. (*Williams.*)

Subsp. **seriata**, MITTEN.

On earth, Gold Creek Cañon, near Juneau, Alaska. (*Miss G. Cooley.*)

1041. **P. Macounii**, LESQ. & JAMES, Mosses of N. America, 208.

Wet places near Victoria, Vancouver Island, May 9th, 1875 (type station); wet rocks, Nanaimo, V.I., June 6th, 1887; on wet earth, Hastings, B.C., April 13th, 1889; wet earth at Revelstoke, B.C., May 9th, 1890. (*Macoun.*) Juneau, alt. 3,000 feet; also a doubtful specimen from Gold Creek Cañon, near Juneau, Alaska. (*Miss G. Cooley.*)

1042. **P. Muhlenbergii**, BRID.; LESQ. & JAMES., Mosses of N. America, 208.

On earth by a brook at Woodstock, N.B., July 4th, 1899. (*Macoun.*)

1043. **P. Arnellii**, HUSNOT.

On wet rocks, Greenland. (*Wenck.*)

1044. **P. Vancouverensis**, KINDB., Bryol. N. Am. & Eur. 326.

Leaves long-subulate ; perigonial, patent, erect, broadly ovate-anceolate, acute, nearly nerveless.

On wet earth at Yale, B.C., May 17th, 1889 ; on wet rocks along the Nanaimo River, April 26th, 1887. (*Macoun.*) Nagai Island, Alaska, Sept. 18th, 1892. (*J. M. Macoun.*)

1045. **P. cæspitosa**, WILSON.

In swamps, Greenland. (*Lange.*)

1046. **P. alpicola**, JURATZKA.

On wet ground, Greenland. (*Vanhoeffen.*) In Newfoundland. (*Waghorne.*)

1047. **P. acutiflora**, KINDB., Hedwigia, 1896, p. 77.

Leaves not serrate and not falcate, recurved to or above the middle, with double mamillæ, generally appressed when dry, smaller than in *P. calcarea*. Perigonial leaves horizontally spreading. Tufts no high ; fruiting stem very low.

On damp earth, Roger's Pass, Selkirk Mountains, B.C., July 30th, 1890 ; in damp meadows, Pier's farm, Victoria, Vancouver Island, May 8th, 1893. (*Macoun.*) On damp earth, Chilliwack River, B.C., 1901. (*J. M. Macoun.*)

1048. **P. adpressa**, FERGUSON.

Wet places, Greenland. (*Vanhoeffen.*)

1049. **P. radicalis**, BEAUVOIS.

Bartramia radicalis, Beauv.; Lesq. & James, Mosses of N. America, 206.

On rocks in a ravine at Goldstream, and on the shore of Shawnaglin Lake, near Victoria, Vancouver Island, 1893. (*Macoun.*)

1050. **P. pumila**, KINDB., Bryol. N. Am. & Eur., 328.

Leaves erect, smaller and narrower than in *P. rigida*; costa scarcely excurrent. Tufts about 1 cm. high.

In ditches near the paper mill, Belleville, Hastings Co., Ont. (*Macoun.*)

70. **CATOSCOPIUM**, Brid.418. **C. nigratum**, (HEDW.) BRID.

In fine fruit about springs at Dawson, Yukon, May 7th, 1899 (*Williams.*)

MEESIA, Hedw.420. **M. uliginosa**, HEDW.

M. trichodes, (LINN.) Spruce; Kindb., Bryol. N. Am. & Eur., 318.

On boggy ground, Jumping Pound Creek, Rocky Mountains, June 14th, 1897. (*Macoun.*) At Dawson, Yukon. (*Williams.*)

422. **M. Albertinii**, BRUCH & SCHIMP.

In bogs, Newfoundland. (*Waghorne.*)

423. **M. tristicha**, BRUCH & SCHIMP.

M. triquetra, (LINN.) Aongst.; Kindb., Bryol. N. Am. & Eur., 318.

In bogs along Bragg's Creek, Elbow River, Alta., July 9th, 1897. (*Macoun.*) In fine fruit in Klondike River bottom, Yukon, July 23rd, 1899. (*Williams.*)

73. **PALUDELLA**, Ehrh.424. **P. squarrosa**, (LINN.) BRID.

In a bog north of the Saskatchewan at Prince Albert, Sask., July, 1896. (*Macoun.*) In bogs, Port Etches, Alaska, Lat. 60° 30', June 18th, 1892. (*J. M. Macoun.*) Sterile specimens growing in bogs at Lake Lindeman; found abundantly in fruit at Dawson, July 23rd, 1899, growing in large patches many feet across. (*Williams.*)

75. **LEPTOBRYUM, Schimp.**427. **L. pyriforme, SCHIMP.**

Moist ground, Edmonton, Ont., 1892. (*Jas. White.*) Fort Chimo, Ungava Bay, Labrador, 1896. (*A. P. Low.*) On Mount Forget-me-not, Elbow River, Rocky Mountains, Alta., 1897; railway cutting at Goldstream, near Victoria, Vancouver Island, 1893; in woods, Cape Breton Island, N.S., 1898; Algonquin Park and Golden Lake, Ont., 1900; along a railway ditch above Leamington, Essex Co., Ont., 1901. (*Macoun.*) Lake Lindeman and Dawson, Yukon, 1899. (*Macoun.*)

76. **WEBERA, Hedw.**1051. **W. subpolymorphum, KINDB., Bryol. N. Am. & Eur. 390.**

Capsule oblong, pendant, and smaller than in *W. polymorphum*; neck shorter; lid rostellate. Leaves less crowded and not appressed when dry, sometimes subdecurrent; cells wider, stem uniformly foliate, not marked below. Dioecious.

On earth, mountains north of Griffin Lake, Gold Range, B.C.; alt. 7,500 feet, Aug. 10th, 1889. (*Macoun.*)

433. **W. nutans, HEDW.**

Bryum nutans, Schreb.; Kindb., Bryol. N. Am. & Eur. 384.
Pohlia nutans, (Schreb.) Lindb.

A very common moss on old logs, at the base of stumps and on earth in all parts of Ontario. (*Macoun.*) Salmon Creek near Juneau, and Loring; also at Nanaimo, Vancouver Island. (*Miss G. Cooley.*) Sheep Camp, Dyea Creek, Alaska; also on an island in the Yukon just below Fort Selkirk. (*Williams.*)

Var. **Macounii, KINDB., Bryol. N. Am. & Eur. 385.**

All leaves, also those on sterile stems and shoots, distinctly serrate, not glossy, finally red, densely crowded, appressed when dry.

In a wet railway cutting at Goldstream, Vancouver Island, June 2nd, 1893. (*Macoun.*)

Mr. Williams obtained a variety, his No. 643, at Lake Lindeman which has not yet been named.

434. **W. sphagnicola**, SCHIMP.*Pohlia sphagnicola*, (Brid.) Lindb. & Arn.

Growing with slender, mostly solitary stems up through tufts of *Sphagnum* and *Aulacomnium*. In fine fruit at Dawson, Yukon, July 2nd, 1899. (Williams.)

1052. **W. gracilis**, DE NOT.*Pohlia gracili*, Lindb.

On a shaded, moist sand bank of the Klondike River just above Dawson, Yukon, 1899. (Williams.)

1053. **W. proligera**, (LINDB.)*Pohlia proligera*, Lindb.

In a marshy place at Lake Lindeman, Yukon, 1899 (Williams.)

1054. **W. cucullatiforme**, Kindb., Bryol. N. Am. & Eur. 387.

Differs from *W. cucullata*; leaves subdecurent smaller, appressed when dry, upper generally acute. Capsule smaller and more constricted; cilia appendiculate.

On rocks, St. Paul Island, Behring Sea, August 1st, 1892. (J. M. Macoun.)

436. **W. canaliculata**, C. M. & KINDB.

Bryum nutans subsp. *canaliculatum*, C. M. & Kindb.; Kindb., Bryol. N. Am. & Eur. 385.

On rocks Unalaska Island, Behring Sea, June 15th, 1892; on rocks Chilliwack Valley, B.C., 1901. (J. M. Macoun.)

438. **W. pycno-decurrrens**, C. M. & KINDB.*Bryum microsporum*, Kindb., Bryol. N. Am. & Eur. 388.

On earth on the mountains along the Chilliwack River, B. C., 1901. (J. M. Macoun.)

439. **W. microcaulon**, C. M. & KINDB.

Bryum polymorphum, Hoppe & Hornsch, subsp. *brachycarum*. Hoppe & Hornsch; Kindb., Bryol. N. Am. & Eur., 390.

St. George Island, Behring Sea, 1892. (J. M. Macoun.)

444. **W. Lescuriana**, LESQ. & JAMES.

Bryum Lescurii, Sulliv. ; Kindb., Bryol. N. Am. & Eur. 386.

On earth at Woodstock, N.B., July 4th, 1899. (*Macoun.*)

445. **W. carnea**, SCHIMP.

Bryum carneum, Linn.; Kindb., Bryol. N. Am. & Eur. 385.

In a railway cutting at Goldstream, near Victoria, Vancouver Island, June 2nd, 1893. (*Macoun.*)

446. **W. cruda**, SCHIMP.

Bryum crudum, (Linn.) Hudson ; Kindb., Bryol. N. Am. & Eur. 383.

Crevices of rocks, Parry Sound, and at Edmonton, Ont., 1893. (*Jas. White.*) On rocks, Nagai Island, Alaska, 1892, and St. Paul Island, Behring Sea, 1892; crevices of rocks, Chilliwack River, B.C., 1901. (*J. M. Macoun.*) On rocks, Baffin Land, north of Hudson Strait, 1897. (*Dr. R. Bell.*) On rocks, Fort Chimo, Ungava Bay, Labrador, 1897. (*A. P. Low.*) On rocks, Big Intervale, Margaree, Cape Breton Island, N.S., 1898; along Bragg's Creek, Rocky Mountains, Alta., 1897; on rocks, Cascades, Gatineau River, Que., 1900; crevices of rocks. C  che Lake, Algonquin Park, Ont., 1900. (*Macoun.*) Gold Creek Ca  on, Juneau, Alaska. (*Miss G. Cooley.*) Lake Lindeman, Yukon, 1899. (*Williams.*)

447. **W. Schimper**, (C. MUELL.) SCHIMP.

Bryum Schimper, C. Muell.; Kindb., Bryol. N. Am. & Eur. 385.

On rocks, Seal Lake, Labrador, August 3rd, 1896. (*A. P. Low.*)

450. **W. commutata**, SCHIMP.

Pohlia commutata, Lindb.

On rocks, Greenland. (*Berggren.*) Gold Creek Ca  on, Juneau, Alaska. (*Miss G. Cooley.*) On a sandy bank of a stream, Lake Lindeman, Yukon, 1899. (*Williams.*)

Subsp. **gracile**, Schleich.; Kindb., Bryol. N. Am. & Eur. 388.

Crevices of rocks, Mount Queest, Gold Range, B.C., July, 1889. (*J. M. Macoun.*) Referred to *W. subcucullata*, in part VI., p. 113.

1055. **W. pseudo-carneum**, KINDB., Ott. Nat. Vol. XIV. p. 88.

Differs from *W. carneum* in the leaves being shorter, ovate-oblong, and long-decurrent; costa percurrent. Capsules not seen. On damp sand, Sable Island, N.S., August 16th, 1899. (*Macoun.*)

452. **W. albicans**, SCHIMP.

Bryum albicans, Wahlenberg; Kindb., Bryol. N. Am. & Eur. 389.

St. Paul Island, Behring Sea, Aug. 18th, 1892. (*J. M. Macoun.*)
Damp rocks, Fort Chimo, Ungava Bay, Labrador, 1896. (*A. P. Low.*)
Damp banks, Cadboro Bay, and wet rocks, Goldstream, Vancouver Island, 1893; wet rocks, Crow's Nest Pass, Rocky Mountains, Alta., 1897; in a railway ditch above Leamington, Essex Co., Ont., 1901. (*Macoun.*)

1056. **W. nitescens**, KINDB., Botan. Notiser, 1896.

Leaves oblong-lanceolate, acuminate; perichetial leaves long. Capsule not constricted; cilia long. Perigonal leaves erect. Tufts dense tomentose, silky or golden glossy. Dioecious with gemmiform male flowers; rarely synœcious.

On earth, Greenland. (*Vanhæffen.*)

77. **BRYUM**, Dill.

454. **B. arcticum**, BRUCH & SCHIMP.

St. Paul Island, Behring Sea, 1891, Alaska. (*Dr. Merriam.*) On earth in rather dry places at Dawson, Yukon, 1899. (*Williams.*)

457. **B. purpurascens**, BRUCH & SCHIMP, subsp. **autumnale**, LIMPRICHT.

Newfoundland. (*Waghorne.*)

460. **B. pendulum**, (HORNSCH.) SCHIMP.

At Dawson in fine fruit, July 30th, 1899; other specimens were collected on earth on ledges of rock at Dawson which were for a time doubtfully referred to *B. Brownii*, Br. & Sch. (*Williams.*)

1057. **B. Dawsonense**, R. S. WILLIAMS. Bull. of New York Bot. Gar., Vol. II., p. 124.

This plant is undoubtedly close to *B. pendulum*, differing in the short-pointed leaves, more distinctly bordered and in the long cilia, some of which are finely appendiculate.

In good fruit on damp earth at Dawson, August 28th, 1898. (*Williams.*)

1058. **B. longisetum**, BLAND.

On swampy ground with *Meesia uliginosa*, and in good fruit, July 31st, 1898. (*Williams.*)

1059. **B. conditum**, R. S. WILLIAMS, Bull. of New York Bot. Gar., Vol. II., p. 125.

On a rocky hillside between Cañon City and Sheep Camp on Dyea Creek, March 28th, 1898. This plant comes nearest *uliginosum*, I believe, but differs in the more pointed leaf, with more distinct and revolute border, pitted leaf cells, blunt lid, more developed inner peristome and dioecious inflorescence. (*Williams.*)

1060. **B. cuspidatum**, SCHIMP.

Collected at Dawson, Yukon. This species has the costa excurrent into a sharp, denticulate point, 4 or 5 cells in length. (*Williams.*)

1061. **B. compactum**, HORNSCHUCH.

On rocks, Greenland. (*Vanhæffen.*)

1062. **B. Roellii**, PHILIBERT.

Along Farewell Creek, Cypress Hills, Assa., June 27th, 1895. (*Macoun.*)

1063. **B. Alaskanum**, KINDB.

Leaves broad-ovate, apiculate or very short-acuminate, reflexed all around; cells wide, the upper sub-rhombic; costa short-excurrent. Capsule short but not thick, subclavate-piriform; lid convex, mamillate; pedicel not long. Fruiting stem tomentose with shorter and longer shoots. Uppermost leaves of stem and shorter shoots glomerate; those of longer shoots not glomerate.

Alaska. (*J. M. Macoun.*) Locality unknown.

463. **B. inclinatum**, BRUCH & SCHIMP.

On sandy earth, Sable Island, N.S., Aug. 3rd, 1899. (*Macoun.*)

464. **B. Froudei**, KINDB.

On earth along Farewell Creek, Cypress Hills, Assa., June 26th, 1894. (*Macoun.*)

1064. **B. micans**, LIMPRICHT.

On earth or rocks, Greenland. (*Berggren.*)

1065. **B. lapponicum**, KAURIN., subsp. **subinclinatum**, KINDB.

Spores smaller than in the species, about 0.02 mm. Endostome adhering to the teeth; lid apiculate. Tufts very dense and tomentose.

On earth near Seal Lake, northern Labrador, July, 1896. (*A. P. Low.*)

477. **B. bimum**, SCHREBER

Along Jumping Pound Creek, Rocky Mountains, Alta., 1897; on earth in a ravine, Woodstock, N.B., July, 1899; in boggy places west of Hull, Que., June, 1899; on Drummond Island, Niagara Falls, Ont., 1901. (*Macoun.*)

Var. **atrotheca**, REN. & CARD., Bot. Gaz., Vol. XIX., p. 238 (1894.)

Capsule, black-red; leaves scarcely denticulate or quite entire at the point.

Newfoundland, 1892. (*Waghorne.*)

479. **B. leucolomatium**, C. M. & KINDB.

Marshy spot, Otter Slide Brook, Algonquin Park, Ont., July 18th, 1900. (*Macoun.*)

480. **B. pallescens**, SCHLEICH.

On earth in a ravine, Grand Narrows, on dead wood and earth, Margaree, and on earth and rocks, Half-Way Brook, Cape Breton Island, N.S., 1898; on earth at C  che Lake, Algonquin Park, Ont., June, 1900; by the Saskatchewan at Prince Albert, Sask., June, 1896; on wet ground, Bragg's Creek, Elbow River, Rocky

Mountains, Alta., 1897. (*Macoun.*) On earth, Chilliwack Valley, B. C., 1901. (*J. M. Macoun.*)

483. **B. Knowltoni**, BARNES.

On damp and brackish sandy earth along the Lagoon, Sable Island, N.S. Not uncommon, Aug., 1899. (*Macoun.*)

488. **B. Raui**, AUSTIN.

On wet rocks, Sea's Farm, near Victoria, Vancouver Island, 1893. (*Macoun.*)

489. **B. Muehlenbeckii**, BRVOL. EUR.

On the summit of Hermit Mountain, Roger's Pass, Selkirk Mountains, B.C., Aug. 5th, 1890. (*Macoun.*)

494. **B. capitellatum**, C. M. & KINDB.

B. Oreganum, Sulliv.; Lesq. & James Mosses of N. Am. 230.

Mrs. E. G. Britton and Mr. R. S. Williams have compared the types of those two species and are satisfied that they are the same.

497. **B. caespiticiu**m, LINN.

Along the railway bank, above Leamington, Essex Co., May 25th, 1901. (*Macoun.*) In good fruit at Dawson, Yukon, June 10th, 1898. (*Williams.*)

498. **B. synoico-caespiticiu**m, C. M. & KINDB.

On earth by Niagara River, above the Suspension Bridge, Ont., May 18th, 1901. (*Macoun.*)

504. **B. capillare**, LINN.

Quite common on the bases of trees in woods, Niagara Falls, May, 1901; also on earth in woods, Camlachie, Lambton Co., Ont., May 20th, 1901. (*Macoun.*)

Subsp. **ruraliforme**, Kindb., Bryol. N. Am. & Eur. 358.

Leaves brown-red, strongly dentate, subacute; limb brown. Shoot-leaves sometimes decurrent. Capsules unknown. Habit of *Barbula ruralis*. On damp rocks, Pier's Farm, Burnside Road, Victoria, Vancouver Island, May 11th, 1893. (*Macoun.*)

Subsp. **erythroloma**, Kindb., Bryol. N. Am. & Eur. 358.

Leaves purplish red, acute, nearly entire, limb rose-red.

On rocks by the sea, at Esquimalt, near Victoria, Vancouver Island, May 13th, 1893. (*Macoun.*)

1066. **B. speirophyllum**, KINDB., Bull. Soc. Bot. Ital., 1895.

Differs from *B. capillare*; leaves narrowly limbate, distant, decurrent, generally entire, flaccid when moist, corrugate, not twisted, when dry.

On rocks, Mount Erskine, Salt Spring Island, Gulf of Georgia, B.C., May 9th, 1887; on Cedar Hill, near Victoria, Vancouver Island, April 18th, 1887; the var. *longipile* on damp rocks, Sea's Farm, near Victoria, May 8th, 1893. (*Macoun.*)

1067. **B. Donii**, GREVILLE.

On rocks on Pier's Farm and on Sea's Farm, Burnside Road, near Victoria, Vancouver Island, May 11th, 1893; on rocks in a ravine at Goldstream, near Victoria, Vancouver Island, June 2nd, 1893; on earth at Comox, Vancouver Island, June 19th, 1893. (*Macoun.*)

Subsp. **obconicum**, Hornsch.; Kindb., Bryol. N. Am. & Eur. 359.

On rocks, Salt Spring Island, Gulf of Georgia, B.C., and at Nanaimo, Vancouver Island. (*Macoun.*)

509. **B. pallens**, SWARTZ.

On earth in a ravine, Grand Narrows, Cape Breton Island, N. S., July 27th, 1898. (*Macoun.*) Douglas Island, Lynn Canal, Alaska. (*Miss G. Cooley.*)

510. **B. Duvalii**, VOIT.

On wet earth, Seal Lake, northern Labrador, Aug. 2nd, 1896. (*A. P. Low.*) Unalaska Island, Behring Sea, June 4th, 1897. (*J. M. Macoun.*) Sterile specimens collected at the head of Lake Bennett, Yukon. (*Williams.*)

511. **B. pseudotriquetum**, SCHWAEGR.

B. ventricosum, Dickson; Kindb., Bryol. N. Am. & Eur. 363.

On wet rocks and earth, Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898; by a spring, Jumping Pound Creek, Rocky Mountains, Alta., June, 1897; on the shore of Shawnagin

Lake, near Victoria, Vancouver Island, June 2nd, 1893. (*Macoun.*)
On wet rock at Skagway, Alaska; in fine fruit, August 27th, 1899.
(*Williams.*)

Var. **hyalodontium**, C. M. & KINDB.

On earth by a spring, Jumping Pound Creek, Rocky Mountains,
Alta., June 15th, 1897. (*Macoun.*)

Var. **compactum**, B. & S.

At Dawson, Yukon, July 17th, 1899, in fine fruit. (*Williams.*)

1068. **B. submuticum**, PHILIBERT; Bull. of New York Bot.
Gar. Vol. II., p. 127.

This species is quite near the preceding variety but still smaller
and more slender. The leaves are broader, shorter pointed, more
entire, and costa vanishing, more frequently, just below the point.

Collected in good fruit, July 17th, 1899, at Dawson; also at the
mouth of Little Salmon River. The plants form extensive mats,
often many feet across, in low wet places. (*Williams.*)

1069. **B. suborbiculare**, PHILIBERT; Bull. of New York Bot.
Gar. Vol. II., p. 128.

This small moss is peculiar in having the broad obtuse leaves,
clustered in three or four rosettes along the stem. It does not
seem to be related very closely to any other American species.

At Dawson, Yukon, growing in a swamp with *Cinclidium* and ap-
parently rare. Collected in good fruit, July 2nd, 1899. (*Williams.*)

517. **B. torquescens**, BR. & SCH.

On earth under trees, Pelee Point, Essex Co., Ont., May 27th,
1901. (*Macoun.*)

1070. **B. Revelstokense**, KINDB., Revue Bryol. 1896.

Leaves ovate-lanceolate, long-acuminate, entire with a pale not
broad limb, much twisted when dry, short-decurrent, except the
uppermost glomerate. Pedicel very long. Tufts green-tomentose
1-2 cm. high. Dioecious.

On rocks at Revelstoke, B.C., May 9th, 1890; barren specimens
referred here were collected at Crow's Nest Lake, Rocky Moun-
tains, Aug. 3rd, 1897. (*Macoun.*)

1071. **B. grandirete**, KINDB., Bryol. N. Am. & Eur. 353.

Leaves acute, not limbate, imbricate when dry, ovate or broad-ovate, not or scarcely acuminate, loosely disposed and short-decurrent; cells very large; upper sub-rhombic; costa percurrent. Capsules unknown. Tufts sparingly radiculose, red-brown below, yellowish green above, not tall.

On earth, Roger's Pass, Selkirk Mountains, B.C., Aug. 7th, 1890. (*Macoun.*) Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

1072. **B. aciculinum**, KINDB., Bryol. N. Am. & Eur. 355.

Leaves oblong-lanceolate, acute, recurved nearly all around, nearly appressed when dry; upper cells oblong-rhomboidal, lower basal near the costa deep-red, numerous. Capsule brown; teeth pale.

On Sproat Mountain, Columbia River, B.C., alt. 4,500 feet, June 24th, 1890. (*Macoun.*)

1073. **B. flagellusum**, KINDB., Bryol. N. Am. & Eur. 356.

Leaves generally ovate; cells sub-rhombic; costa sometimes short-excurrent. Uppermost leaves and those of flagelliform shoots ovate-oblong. Capsule brown, oblong pyriform, faintly constricted, smaller and shorter than in *B. Ravi*; neck short. Tufts dense-tomentose. Habit of *B. caestiticium*.

On earth at Hector, Rocky Mountains, B.C., Aug. 12th, 1890. (*Macoun.*)

1074. **B. Oreganum**, SULLIV.; Lesq. & James Moses of N. Am. P. 230.

On rocks along the Columbia River at Revelstoke, B.C., May 23rd, 1890. (*Macoun.*)

1075. **B. streptophyllum**, KINDB., Bryol. N. Am. & Eur. 359.

Differs from *B. Oreganum*: All leaves crowded and nearly uniform, upper not larger and not recurved, very concave. Tufts green but finally brown, less low. Capsules unknown.

On earth and rocks at Hasting, B.C., April 6th, 1889. (*Macoun.*)

1076. **B. trichophorum**, KINDB., Bryol. N. Am. & Eur. 359.

Leaves obtusate, appressed, neither recurved nor twisted; lower leaves distant, linear-oblong, acute, upper crowded, suboval. Tufts green. Capsules unknown.

On rocks by the sea, Cadboro Bay, Victoria, Vancouver Island, May 31st, 1893. (*Macoun.*)

1077. **B. Hendersoni**, REN. & CARDT.

On earth at Esquimalt near Victoria, June 23rd, 1887, referred to *pallescens*; at the same place in May, 1893, and on Sea's Farm, Burnside Road, May 18th, 1893. (*Macoun.*)

1078. **B. Sawyeri**, REN. & CARD.

On rocks, at Chelsea, Que., Sept. 9th, 1889. (*Macoun.*)

1079. **B. gemmascens**, KINDB., Bryol. N. Am. & Eur. 360.

Leaves small, twisted, entire, not recurved; lower and middle distant, short-decurrent, narrowly sublingulate, acuminate acute; comal leaves glomerate to a broadly clavate bud, suboval, sub-obtuse. Tufts green. Capsules unknown.

On a rock by the sea at Comox, Vancouver Island, June 22nd, 1893. (*Macoun.*)

1080. **B. extenuatum**, REN. & CARD.

On earth at Hastings, B.C., April 13th, 1889; on logs, Sea's farm, near Victoria, Vancouver Island, May 6th, 1893. (*Macoun.*)

1081. **B. tomentosum**, KINDB., Bryol. N. Am. & Eur., 361.

Leaves subovate, gradually acuminate, entire, decurrent, small. Tufts brown and very tomentose below, green above, dense and rather small. Leaves short as in *B. elegans*, not recurved; cells sub-rhombic. Dioecious. Capsules unknown.

On earth at Hector, Rocky Mountains, B.C., Aug. 14th, 1890. (*Macoun.*)

1082. **B. producticolle**, KINDB., Bryol. N. Am. & Eur., 364.

Leaves ovate-lanceolate, reflexed, distinctly limbate; costa long-excurrent. Capsule narrow, strangulate; neck long not curved; lid short-apiculate; cilia long-appendiculate. Tufts about 1 cm. high. Spores scarcely 0.02 m.m.

On earth and rocks near Victoria, Vancouver Island, May 25th, 1893. (*Macoun.*)

1083. **B. occidentale**, SULLIV. ; Lesq. & James, Mosses of N. America, p. 236.

On earth along Crow's Nest Lake, Rocky Mountains, Alta., Aug. 3rd, 1897. (*Macoun.*)

1084. **B. gemmuligerum**, KINDB., Bryol. N. Am. & Eur., 368.

Leaves subovate, obtusate, small ; those of the shoots broader, obtuse ; costa long-excurrent. Capsule brown, oblong or obovate with a short thick neck, distinctly constricted when dry, not large ; teeth yellow ; segments long-fenestrate ; cilia long-appendiculate ; lid large, apiculate or mamillate. Spores about 0.01 mm. Monoecious or dioecious.

On earth, 12-Mile Lake, Wood Mountain, Assa., June 6th, 1895. (*Macoun.*)

523. **B. acutiusculum**, C. MUELL.

On earth summit of Smoky Mountain, Cape Breton Island, N.S., Aug. 3rd, 1898. (*Macoun.*)

524. **B. bullatum**, C. MUELL.

On earth by the Asulcan Glacier, Selkirk Mountains, B.C., Aug. 7th, 1890. (*Macoun.*)

1085. **B. Ferchellii**, FUNCK.

On rocks near the water above the old mill at the Cascades, Gatineau River, Que., June 23rd, 1900 ; also in the same situation on the Petewawa River, Algonquin Park, Ont., July 24th, 1900. (*Macoun.*)

1086. **B. affine**, BRUCH.

On earth east of C  che Lake, Algonquin Park, Ont., June 9th, 1900. (*Macoun.*)

1087. **B. globosum**, LINDBERG.

Newfoundland. (*Waghorne fide Kindberg.*)

1088. **B. microstegioides**, KINDB., Ott. Nat., Vol. XIV., p. 88.

Differs from *B. submicrostegium* : leaves short-acuminate ; capsule with a large lid ; endostomial membrane very low ; cilia short and smooth.

Prybilov Islands, Behring Sea, 1891. (*Palmer.*)

RCELLIA, Kindb., Revue Bryol., 1896.521. **R. simplex**, KINDB.*Bryum simplex*, Kindb., Cat. Can. Musci, p. 135.

Very abundant on the upper slopes of Mount Benson near Nanaimo, Vancouver Island, July 10th, 1893. (*Macoun.*)

78. **ZIERIA, Schimp.**526. **Z. julacea**, SCHIMP.*Plagiobryum Zierii*, (Dicks.) Lindb.

A few sterile specimens collected on earth in crevices of rock about 1000 feet above Lake Lindeman, Yukon. (*Williams.*)

1089. **Z. argenteoides**, (WILLIAMS.)*Plagiobryum argenteoides*, R. S. Williams; Bull. New York, Bot. Gar. Vol. II., p. 129.

With the appearance of *Bryum argenteum*. In dense tufts up to 1 cm. high. Stems simple or branching, vineous red, radiculose below, in cross-section showing an outer wall of one layer of irregular, somewhat thick-walled cells, with ground tissue of very large, thin-walled cells, becoming smaller toward center and enclosing a distinct central strand. Leaves concave, appressed, broadly ovate, with short abrupt point, entire, mostly $\frac{1}{2}$ mm. long or less or occasionally the terminal leaves lanceolate pointed and up to 1 mm. long. Costa vanishing from $\frac{1}{3}$ to $\frac{2}{3}$ up. Upper $\frac{1}{3}$ of leaf usually hyaline. Alar cells and most basal cells square (sides 12 to 16 mm.) to short rectangular (1 to 2.) Median cells irregularly rhomboidal to oblong-linear, up to .040 or .050 mm. Cell walls somewhat thickened, especially above.

Found on bare rock in dry places on the Yukon River, just below Dawson, Yukon, March 19th, 1899. (*Williams.*)

79. **MNIUM, Linn.**529. **M. venustum**, MITT.

Growing in company with *M. insigne*, in the Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

530. **M. macrociliare**, C. M. & KINDB.

On rocks, Brulé Lake, Algonquin Park, Ont., June 13th, 1900. (*Macoun.*)

Mrs. Britton says of the specimen cited from Northumberland Co., Ont., in part VI., p. 137, that it is a mixture of *M. cuspidatum*, *M. serratum*, Schw. and *M. affine* var. *ciliare* (Grev.)

531. **M. Drummondii**, BRUCH & SCHIMP.

Shady banks at Edmonton, Ont., June, 1893. (*Jas. White.*) On the bases of trees in the Cypress Hills, June, 1895; on earth in a ravine, Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898; in earth in a ravine, Woodstock, N. B., July, 1899; C  che Lake, Algonquin Park, Ont., 1900. (*Macoun.*)

532. **M. rostratum**, SCHWAEGR.

On shady rocks, Credit Forks, Ont., Aug., 1893. (*Jas. White.*) On a large boulder in Rockcliffe Park, Ottawa, Ont., April, 1896; on rocks, Lake Agnes, Rocky Mountains, Aug., 1891; on the Elbow divide, Rocky Mountains, 1897; on boulders in woods Algonquin Park, Ont., June, 1900. (*Macoun.*)

533. **M. medium**, BRUCH & SCHIMP.

On earth, Hunter's River, Prince Edward Island, July, 1888; on wet rocks, New Westminster, B.C., May, 1875; on rocks, in a brook, at Revelstoke, B.C., May, 1890. The last reference appeared in Part VI., p. 141, as *M. umbratile*. (*Macoun.*) Left bank of Klondike River, just below Bonanza Creek, not common; also collected at Skagway, growing abundantly under the heavy evergreen forests. (*Williams.*)

534. **M. affine**, BLAND.

Along the Skeena River, B.C., May, 1892. (*J. M. Macoun.*) Wet woods, Edmonton, Ont., July, 1892. (*Jas. White.*) Around springs in the Cypress Hill, June, 1894; Dry Ca  on, Devil's Lake, Banff, Rocky Mountains, Aug. 10th, 1891: in wet woods, Algonquin Park, Ont., 1900. (*Macoun.*)

1090. **M. ciliare**, GREVILLE.

Shaded places along the Tobique River, N.B., July, 1884. (*G. U. Hay.*) On earth along a brook, Big Intervale, Margaree, Cape

Breton, July, 1898; in woods in a swamp at Wyoming, Lambton Co., Ont., June 14th, 1901. (*Macoun.*)

553. **M. rugicum**, LAW. R.

In bogs by Clearwater River, northern Labrador, July 9th, 1896. (*A. P. Low.*) Head of Lake Bennett, Yukon. (*Williams.*)

1091. **M. robustum**, KINDB., N. Sp.

M. insigne var. *intermedium*, Kindb.; Cat. Can. Musci, p. 139.

Leaves not at all or very short-decurrent. Syncæious. Otherwise, as in *M. insigne*.

Common on Cedar Hill, near Victoria, Vancouver Island, April 17th, 1887. (*Macoun.*)

537. **M. hornum**, LINN.

Rather common on Cape Breton Island, N.S., at Louisburg, Baddeck, Sydney and Margaree, July, 1898; very abundant on Sable Island, N.S., July, 1899. (*Macoun.*)

538. **M. serratum**, BRID.

M. marginatum, Dicks.; Kindb., Bryol. N. Am. & Eur., 343.

Klondike River, near the mouth of Bonanza Creek, Yukon, June 18th, 1899. (*Williams.*)

539. **M. orthorhynchum**, BRUCH & SCHIMP.

Amongst rocks, Unalaska Island, Behring Sea, June, 1897. (*J. M. Macoun.*) On rock and earth, Bragg's Creek, Elbow River, Rocky Mountains, July, 1897. (*Macoun.*) Salmon Creek, near Juneau, Alaska. (*Miss G. Cooley.*) Dawson, Yukon, in good fruit, July 16th, 1899. (*Williams.*)

541. **M. pseudo-lycopodioides**, C. M. & KINDB.

On the bases of trees, Credit Forks, Ont., Sept., 1892. (*Jas. White.*) On earth and rocks by a brook, Meech's Lake, Chelsea, Que., Sept., 1893; on earth along Bragg's Creek, Elbow River, Rocky Mountains, July 1897. (*Macoun.*)

542. **M. inclinatum**, LINDB.

On earth on rocks along Bragg's Creek, Rocky Mountains, July, 1897; on rocks in the "Dry Cañon," Devil's Lake, Rocky Mountains, Aug., 1891. (*Macoun.*)

543. **M. umbratile**, MITT.

On rocks in a ravine at Goldstream, near Victoria, Vancouver Island, June, 1893. (*Macoun.*)

544. **M. spinulosum**, BRUCH & SCHIMP.

On earth, South Kootanie Pass, Rocky Mountains, July, 1883. (*Dr. G. M. Dawson.*) Dry woods, Edmonton, Ont. (*Jas. White.*) On earth at the bases of trees, Algonquin Park, Ont., 1900; in woods, Niagara River at Foster's Flats, Ont., May 13th, 1901. On Saddle-back Mountain, Devil's Lake, Rocky Mountains, Aug., 1891; on earth under trees near Victoria, on wet rocks, Mount Benson, near Nanaimo, and at the Union Mines, Comox, Vancouver Island, 1893; on earth, Moose Mountain, Elbow River, Rocky Mountains, July, 1897. (*Macoun.*) Lake Lindeman, Yukon. (*Williams.*)

546. **M. stellare**, HEDW.

On damp rocks, Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898. (*Macoun.*)

547. **M. Blyttii**, BRUCH & SCHIMP.

Dawson, Yukon. Specimens sterile. (*Williams.*)

548. **M. cinclidioides**, HEUBEN.

In woods at Campbellton, N.B., Sept., 1882; in woods near Kakabeka Falls, west of Lake Superior, July, 1869. Both these specimens were referred to *M. punctatum* in Cat. Can. Musci, p. 143; in a springy place, Red Pine Lake, Algonquin Park, Ont., July 21st, 1900. (*Macoun.*) Dawson, Yukon. (*Williams.*)

549. **M. punctatum**, HEDW.

Rather common on earth and in bogs at Baddeck, Margaree, and Half-Way Brook, Cape Breton Island, N.S., July, 1898; in a

bog, Union Mines, Comox, Vancouver Island, June, 1893; on earth in a ravine at Woodstock, N.B., July, 1899; in wet places, Algonquin Park, Ont., 1900. (*Macoun.*) Unalaska Island, and Kadiak Island, Behring Sea, Aug., 1891. (*J. M. Macoun.*) Lake Lindeman. (*Williams.*) Loring, Sitka; Salmon Creek, near Juneau; near the snow line above the basin. (*Miss G. Cooley.*)

1092. **M. glabrescens**, KINDB., Note on Canad. Bryol., 1893.

Leaves oval-lingulate, green or pale red, not nigrescent; the uppermost suboblong or oblong-lanceolate; cells smaller than in *M. punctatum*. Perichetial leaves as in *M. subglobosum*. Stem nearly glabrous. Pedicel longer than in *M. punctatum*.

On earth and old logs in woods at Port Etches and Sitka, Alaska; also on Carmanah Point, Vancouver Island, 1892. (*J. M. Macoun.*) On old logs, Queen Charlotte Islands, B.C., July, 1878; and on earth at Comox, Vancouver Island, July, 1885. (*Dr. G. M. Dawson.*) On old logs at Victoria, Vancouver Island, May, 1875 and in May, 1893, and at Comox, Vancouver Island in April, 1887. This is a common and distinct species on Vancouver Island. (*Macoun.*)

Subsp. **chlorophyllosum**, KINDB., Bryol. N. Am. & Eur., 340.

Capsule (unripe) narrowly oblong. Leaf-cells very chlorophyllose. Stem tomentose.

On wet rocks in a brook emptying into the west side of Meech's Lake, near Chelsea, Que., Sept. 23rd, 1893. (*Macoun.*)

550. **M. subglobosum**, BRUCH & SCHIMP.

Seal Lake, northern Labrador, July, 1896. (*A. P. Low.*) In boggy places, Middleton Island, Alaska; also on St. George and St. Paul islands, Behring Sea, 1892. (*J. M. Macoun.*) Lake Lindeman, Yukon. (*Williams.*)

551. **M. hymenophyllum**, BRYOL. EUR.

Bennett City and Dawson, Yukon. Growing in large thick tufts in damp and shady or wet places. (*Williams.*)

552. **M. hymenophylloides**, HEUBEN.

On earth, St. George Island, Behring Sea, July, 1892. * (*J. M. Macoun.*) On rocks, Half-Way Brook, Cape Breton Island, N.S., Aug., 1898. (*Macoun.*)

1093. **M. arcticum**, KINDB. (1897.)

Karajak, Nunatak, Greenland. (*Vanheffen*.)

1094. **M. riparium**, MITTEN.

Wet rocks, Rockcliffe Park, Ottawa, Ont., April, 1899; on rocks in a ravine, Woodstock, N.B., July 4th, 1899. On rocks in the Crow's Nest Pass, Rocky Mountains, August 20th, 1897. (*Macoun*.)

553. **M. Menziesii**, C. MUELL.

Leucolepis acanthoneura, SCHW.; Kindb., Byrol. N. Am. & Eur. 335.

Chilliwack Valley, B.C., 1901. (*J. M. Macoun*.)

80. **CINCLIDIUM**, Swartz.554. **C. stygium**, SWARTZ.

Common in swampy places at Dawson, Yukon. In fine fruit, July 9th, 1899. (*Williams*.)

555. **C. subrotundum**, LINDB.

Fort Chimo, Ungava Bay, Labrador, Sept., 1896. (*A. P. Low*.) On wet earth at Truro, N.S., June, 1883. (*Macoun*.) Head of Lake Bennett, Yukon, about springs. Tufts often 9 cm. high. (*Williams*.)

1095. **C. Macounii**, KINDB., Revue Bryol, 1896.

Stem-leaves round-spathulate finally blackish; shoot-leaves pale red or greenish, lingulate, generally obuse. Capsule subovate.

In a bog at Stephen by the "Great Divide" summit of the Rocky Mountains, B.C., July 23rd, 1885; in a bog north of Prince Albert, Sask., July 3rd, 1896. (*Macoun*.)

81. **AULACOMNIUM**, Schwaegr556. **A. androgynum**, SCHWAEGR.

On earth in woods, C  che Lake, Algonquin Park, Ont., 1900, on banks above Leamington, Essex Co., Ont., May 25th, 1901; on old logs at Revelstoke, B.C., May, 1890. (*Macoun*.) Chilli-

wack Valley, B.C., 1901. A form with short leaves; on old logs along the Skeena River, B.C., May, 1892. (*J. M. Macoun.*)

557. **A. palustre**, SCHWAEGR.

North shore of Hudson Strait, Baffin's Land, 1897. (*Dr. R. Bell.*) In swamps at Edmonton, Ont., 1893. (*Jas. White.*) Boggy ground, Lat. 61°, Long. 104° W., 1893, also Pike's Portage, Great Slave Lake, May 25th, 1900. (*J. W. Tyrrell.*) Bogs, northern Labrador, 1897. (*A. P. Low.*) Boggy places, Sable Island, N.S., Aug., 1899; in wet woods, Baddeck, and on Smoky Mountain, Cape Breton Island, N.S., 1898; in bogs, Algonquin Park, Ont., 1900; in a peat bog at Galt, Ont.; in wet woods, Niagara Falls, Ont., 1901; along Jumping Pound Creek, Rocky Mountains, Alta. (*Macoun.*) Mouth of Little Salmon River, Yukon. Fruiting, June 16th. (*Williams.*)

Var. **imbricatum**, BRUCH & SCHIMP.

Very common in wet places at Dawson, Yukon. (*Williams.*)

558. **A. turgidum**, SCHWAEGR.

On wet ground, Fort Chimo, Ungava Bay, Labrador, Aug., 1896. (*A. P. Low.*) Sheep Camp, Dyea Creek, Alaska; sterile; Dawson, Yukon, very abundant; fruiting. (*Williams.*)

82. **TIMMIA**, Hedw.

560. **T. megapolitana**, HEDW.

Marsh Lake and Klondike River, near its mouth. This species seems to grow mostly on rather dry earth at the base of rock ledges somewhat at a higher elevation than the next. The capsule is nearly straight and furrowed when dry. (*Williams.*)

1096. **T. cucullata**, MICHX.

Yukon River, just above Dawson, Yukon, growing at the base of trees. This species is quite distinct from *megapolitana*. It differs from *megapolitana* in the wider mouthed capsule, more curved and smooth when dry. (*Williams.*)

561. **T. Austriaca**, HEDW.

On earth, Moose Mountain, Elbow River, Rocky Mountains, July, 1897. (*Macoun.*) Cañon City, Dyea Creek, and Moose Creek, just below Dawson. (*Williams.*)

1097. **T. arctica**, KINDB. Botan. Notiser, 1893.

Greenland. (*Berggren.*)

1098. **T. Bavarica**, HESSLER.

On rocks at Morley, foothills of Rocky Mountains, June 13th, 1885; near Fort St. James, northern British Columbia, June 21st, 1875; on rocks near Victoria, Vancouver Island, May 7th, 1875. All these were included in *T. megapolitana* in Cat. Can. Musci., p. 146. On limestone rocks, Foster's Flats, Niagara Falls, 1901. (*Macoun.*)

1099. **T. Maccunii**, KINDB., N. Sp.

On rocks, Moose Mountain alt. 7500 feet, Elbow River, Rocky Mountains, July 4th, 1897. (*Macoun.*)

83. **ATRICHUM**, Beauv.563. **A. undulatum** BEAUV.

Catharinea undulata, (LINN.). ; Kindb., Bryol. N. Am. & Eur. 154.

On earth at Blueberry Point, Alymer, and Meech's Lake, Que., 1900; also on wet earth, Rainy Lake, Algonquin Park, Ont., 1900. (*Macoun.*) Juneau, Alaska. (*Miss G. Cooley.*)

564. **A. angustatum**, BRUCH & SCHIMP.

Catharinea angustata, BRID. ; Kindb., Bryol. N. Am. & Eur. 154.

On sandy and damp earth north of Beechwood, Ottawa, Ont., 1899; on sandy earth, Algonquin Park, Ont., 1900; on earth in woods, Queenston Heights, Niagara River, Ont., 1901. (*Macoun.*)

565. **A. Selwyni**, AUST.

Catharinea Selwyni, AUSTIN ; Kindb., Bryol. N. Am. & Eur. 153.

On earth in woods, Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898; on damp earth at Woodstock, N.B., July,

1899; on a sandy bank north of Beechwood Cemetery, Ottawa, Ont., Nov. 1st, 1900. I am doubtful of the correctness of the above references.

1100. **A. Haussknechtii**, JURATZKA & MILDE.

On earth in Newfoundland. (*Wazhorne*.) On earth, Rustico Bay, Prince Edward Island, July, 1888; on earth and rocks, Half-Way Brook, Cape Breton Island, N.S., Aug. 1898.

569. **A. leiophyllum**, KINDB.

Port Etches, Alaska, Lat. 60° 30', June 18th, 1892. (*J. M. Macoun*.)

85. **PSILOPILUM**, BRID.

574. **P. arcticum**, BRID.

Left bank of Klondike River, just below Bonanza Creek; on damp black soil of hillside. Not fruiting. (*Williams*.)

86 **POGONATUM**, Beauv.

575. **P. brevicaulis**, BEAUV.

Polytrichum pennsylvanicum, HEDW.; Kindb., Bryol. N. Am. & Eur. 158.

On earth at Half-Way Brook and Baddeck, Cape Breton Island, N.S., 1898; on a sandy bank north side of Beechwood Cemetery, Ottawa, Ont., Oct., 1900. (*Macoun*.)

576. **P. capillare**, BRID.

Polytrichum capillare, RICHARD; Kindb., Bryol. N. Am. & Eur. 159.

Salmon Creek, near Juneau. (*Miss G. Cooley*.) This is probably *P. dentatum*.

578. **P. contortum**, (MENZIES) LESQ.

Catharinella contorta, MENZIES; Kindb., Bryol. N. Am. & Eur. 157.

On earth, Nagai Island, Alaska, Sept. 18th, 1892. (*J. M. Macoun*.) Loring, Sitka. (*Miss G. Cooley*.)

580. **P. atrovirens**, MITT.

Catharinella atrovirens, MITT; Kindb., Bryol. N. Am. & Eur.
157.

On earth in Stanley Park, Vancouver City, B.C., 1893. (*Macoun.*)
Law.) Reported as *P. erythrodontium*, in Part VI., p. 150.

581. **P. urnigerum**, BEAUV.

Polytrichum urnigerum, LINN.; Kindb., Bryol. N. Am. & Eur.
158.

On earth at Baddeck, Grand Narrows, and Louisburg, Cape Breton Island, N.S., 1898; abundant on roadside cuttings, Edmundston, N.B., Sept., 1899. (*Macoun.*) Stillwater River, Labrador, 1896. (*A. P. Low.*) Port Etches, Alaska, Lat. 60° 30', 1892. (*J. M. Macoun.*) Juneau, alt. 3,000 feet; also at Salmon Creek and Gold Creek Cañon, Juneau, Alaska. (*Miss G. Cooley.*)

582. **P. alpinum**, ROEHL.

Polytrichum alpinum, L.; Kindb., Bryol. N. Am. & Eur., 160.

Not rare at Baddeck, Louisburg and Margaree, Cape Breton Island, N.S., 1898; crevices of rocks at Meech's Lake, Que., and Hogsback, near Ottawa, Ont., 1897. (*Macoun.*) Port Etches, Alaska, Lat. 60° 30', 1892. (*J. M. Macoun.*) Juneau, 3000 feet alt.; also at Salmon Creek and Sheep Creek, near Juneau, Alaska. (*Miss G. Cooley.*) Sheep Camp, Dyea Creek, Alaska; and Lindeman, Yukon. (*Williams.*)

Var. **subcylindricum**, KINDB.

Koksoak River, northern Labrador, Aug. 21st, 1896. (*A. P. Low.*)

583. **P. Macounii**, KINDB.

Polytrichum Macounii, Kindb., Bryol. N. Am. & Eur. 159.

On rocks at the mouth of the Skeena River, B.C., May, 1892; mountains at Chilliwack Lake, B.C. (*J. M. Macoun.*)

87. **POLYTRICHUM**, Linn.585. **P. sexangulare**, FLOERKE.

On the mountains above Chilliwack Lake, B.C., 1901. (*J. M. Macoun.*)

586. **P. gracile**, MENZIES.

Wet rocks, Tobique River, N.B., July, 1884. (*G. U. Har.*) Referred in Part VI., p. 151, to *P. alpinum*. Swampy places at Edmonton, Ont., July, 1893. (*Jas. White.*) Fort Chimo, Labrador, Aug. 1896. (*A. P. Low.*) Table Top Mountain, Gaspé Que., Aug., 1882, referred in Part VI., p. 151 to *P. alpinum*; very abundant in woods throughout the Algonquin Park, Ont., July, 1900. (*Macoun.*) Yukon River, just below White Horse Rapids, Yukon. (*Williams.*)

588. **P. Ohioense**, REN. & CARD.

On earth at Baddeck, Half-way Brook, Margaree and Louisburg, Cape Breton Island, N.S., 1898; on earth in beech woods, Leamington, Essex Co., Ont., May, 1901. (*Macoun.*) Moist woods, Edmonton, Ont., 1893. (*Jas. White.*)

590. **P. piliferum**, SCHREB.

Lake Lindeman, Yukon. (*Williams.*) Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

1101. **P. microdontium**, KINDB., in Biblioth. Botan. 42 (1897).
Pogonatum alpinum, var. *microdontium*, Kindb.; Cat. Can. Musci, p. 152.

On St. George and Atka islands, Behring Sea, 1892; also at the mouth of Skeena River, B.C., May, 1892. (*J. M. Macoun.*)

1102. **P. Vanhoeffeni**, KINDB. in Biblioth. Botan. 42 (1897).

Rather rare in Greenland. (*Vanhoeffen*)

591. **P. hyperboreum**, R. BROWN.

On earth near Fort Chimo, Ungava Bay, Labrador, Aug., 1896. (*A. P. Low.*) Lake Lindeman, Yukon. This plant has a white hair-point like *piliferum* but grows up to 8 cm. or more, with abundant branches. (*Williams.*)

592. **P. boreale**, KINDB.

On rocks, Mosquito Bay, Labrador, Lat. 61° 25', Aug. 13th, 1898. (*A. P. Low.*)

1103. **P. Behringianum**, KINDB., Revue Bryol. 1894.

On boggy ground, St. Paul Island, Behring Sea, July, 1892. (*J. M. Macoun.*) On the summit of Sulphur Mountain, Banff, Rocky Mountains, July, 1891. (*Macoun.*) The last specimen is very doubtful.

593. **P. juniperinum**, WILLD.

Quite common in all parts of the country about stumps in pastures, and meadows and woods. (*Macoun.*) Lake Lindeman, Yukon. (*Williams.*)

594. **P. strictum**, BANKS.

Sheep Camp and Dyea Creek, Alaska, and Lake Lindeman, Yukon. (*Williams.*)

595. **P. commune**, LINN.

The var. *minus* is common in a damp thicket at Leamington, Essex Co., Ont. (*Macoun.*) Lake Lindeman and Dawson, Yukon. At the latter place in fine fruit, July 30th, 1899. (*Williams.*)

1104. **P. inconstans**, HAGEN.

Stems slender, up to 8 cm. high, rather uniformly leaved above with a felt of dark red radicles below. Leaves somewhat distant, irregularly spreading, up to 6 mm. long, lanceolate with costa scarcely or short-excurrent and margins minutely serrulate. Lamellæ up to about 24, the median from 5 to 9 cells high, terminating in 1 or sometimes 2 cells, transversely oblong in section about twice wider than high and not or scarcely depressed. Blade of leaf-bearing lamellæ on either side of costa of only two layers of cells thick with cell walls on back of leaf not thickened. Leaf-cells in blade between base of lamellæ and margin of leaf mostly from .012 by .016 mm. to .016 by .020 mm.

Collected at Lake Lindeman in swampy places, May 26th, 1898. (*Williams.*)

88. **DIPHYSCIUM**, Mohr.596. **D. foliosum**, MOHR.

D. se sile, SCHMID.; Kindb., Bryol. N. Am. & Eur. 391.

Abundant on clay banks, Big Intervale, Margaree, Cape Breton Island, N.S., July 22nd, 1898; on earth on rocks, C  che Lake, Algenquin Park, Ont., July, 1900. (*Macoun.*)

89. **BUXBAUMIA**, Hall.

- 1105.
- B. indusiata**
- , BRIDEL ; Kindb., Bryol. N. Am. & Eur. 391.

This species was included in *B. aphylla*, in Part VI., p. 157. I am obliged to Mrs. G. E. Britton for the determination of the species. It has only been found on old logs in damp woods. Above Revelstoke on the Columbia, May 13th, 1890; at Hastings, B.C., April 27th, 1880; also near Victoria, Vancouver Island, May 19th, 1893. (*Macoun.*)

90. **FONTINALIS**, Dill.

- 1106.
- F. gigantea**
- , SULLIV.

In a plaster pit, Big Intervale, Margaree, and in a brook, near Louisburg, Cape Breton Island, N.S., 1898; in a brook at Woodstock, N.B., 1899; on stones in brooks, Algonquin Park, Ont., 1900; in the Courtney River at Comox, Vancouver Island, July, 1893. (*Macoun.*)

- 1107.
- F. Kindbergii**
- , REN. & CARD.

In pools along Peace River near Dunvegan, Atha., Lat. 56°, October, 1872. Referred to *antipyretica*, in Part VI.; in Beaver Meadow Creek, Hull, Que., June, 1898. (*Macoun.*)

- 599.
- F. Neo-Mexicana**
- , SULLIV. & LESQ.

In the creek entering the Columbia at Revelstoke, from Eagle Pass, B.C., May, 1890. Referred in Part VI. to *F. biformis*; on stones in the Courtney River at Comox, Vancouver Island, June, 1893. (*Macoun.*) Brook by Chilliwack Lake, B.C., 1901. (*J. M. Macoun.*)

- 600.
- F. Dalecarlica**
- , SCHIMP.

On stones in the Koaksoak River, Ungava, Labrador, Aug. 1896. (*A. P. Low.*) On stones in brooks at Margaree and Half Way Brook, Cape Breton Island, N.S., July, 1898; on stones in a brook at Woodstock, N.B., July, 1899. (*Macoun.*)

- 601.
- F. biformis**
- , SULLIV.

On stones in the Madawaska River, Algonquin Park, Ont., July 4th, 1900. (*Macoun.*)

602. **F. Novæ-Angliæ**, SULLIV.

On stones in brooks at Halifax, N.S., June, 1883. Referred in Part V. to *F. Neo-Mexicana*; on stones in the Scootamata River, North Hastings, Ont., July, 1870. (*Macoun.*)

Subsp. **involuta**, Ren. & Card.; Kindb., Bryol. N. Am. & Eur., 147.

On stones in Joe Creek, Algonquin Park, Ont., July 17th, 1900 (*Macoun.*)

603. **F. disticha**, HOOK. & WILS.

F. Lescurii, Sulliv.; Kindb., Bryol. N. Am. & Eur., 146.

In brooks along Nipigon Lake, Ont., July, 1884; also along Telegraph Trail, Blackwater River, B.C., June, 1875. (*Macoun.*)

604. **F. hypnoides**, HARTM.

On trees subject to flood along Lake Duchesne, above Britannia, near Ottawa, Ont., Oct. 27th, 1900; on rocks in the Petewawa River, Algonquin Park, Ont., July 24th, 1900; near Victoria, Vancouver Island, May, 1875. The above specimen was referred to *F. disticha* in Part VI. Cat. Can. Musci, p. 159. (*Macoun.*)

605. **F. squamosa**, LINN.

Abundant and in fine fruit on stones in a brook, Long Portage, Petewawa, River, Algonquin Park, Ont., July 25th, 1900; on rocks along the Bonnechere River, at Golden Lake, Ont., Sept. 26th, 1900. (*Macoun.*)

Subsp. **Delamarei**, REN. & CARD.,
F. squamosa, Linn.; Cat. Can. Musci, p. 159.

On stones in a brook, near Aspy Bay, Cape Breton Island, N.S., Aug., 1898. (*Macoun.*)

1108. **F. seriata**, LINDB. Kindb., Bryol. N. Am. & Eur., 148.

On rocks in a brook, Half Way House, Cape Breton Island, N.S., Aug., 1898. (*Macoun.*)

1109. **F. nitida**, LINDB. & ARN.

In brooks near Belleville, Hastings Co., Ont., May, 1871; referred to *F. hypnoides* in Part VI.; in pools along Peace River, below Dunvegan, Oct., 1872, referred to *F. disticha* in Part VI (*Macoun.*)

91. **DICHELYMA**, Myrin.609. **D. pallescens**, BRYOL. EUROP.

D. obtusulum, KINDB.; Cat. Can. Musci, p. 160 is merged in this species.

On the bases of trees in flooded lands at Golden Lake, Ont., Sept., 1900. (*Macoun.*)

1110. **D. falcatum**, (HEDW.) MYRIN.,

D. capillaceum var. *elongatum*, KINDB.; Cat. Can. Musci, p. 160.

In the bed of a small brook 30 miles north of Michipicotin River, Lake Superior, July 27th, 1869. (*Macoun.*) Coast of Labrador. (*Weghorne.*) On wet banks, Lake Lindeman, Yukon In fine fruiting tufts up to 11 cm. high. (*Williams.*)

92. **LEPTODON**, Mohr.611. **L. trichomitrium**, MOHR.

Fosstramia trichomitria, HEDW.; Kindb., Bryol. N. Am. & Eur. 7.

On black ash and basswood trees at Edmonton, Ont., July, 1892; also on trees, Credit Forks, Ont., 1893. (*Jas. White.*)

94. **NECKERA**, Hedw.614. **N. Menziesii**, DRUMM.

Cañon City and Dyea Creek, Alaska. (*Williams.*) Rather common, Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

615. **N. pennata**, (LINN.) HEDW.

Sheep Camp, Dyea Creek, Alaska. On a cotton-wood. (*Williams.*)

516. **N. oligocarpa**, BRUCH.

Specimens collected at Rustico Bay, Prince Edward Island, and at Ottawa, Ont., referred here in Part VI., Cat. Can. Musci belong to *N. pennata*. On rocks in the "Dry Cañon," Devil's Lake, Rocky Mountains, Aug., 1891. (*Macoun.*)

1111. **N. pterantha**, C. M. & Kindb.

N. oligocarpa pterantha, Cat. Can. Musci, p. 162.

In crevices of rock, fruiting abundantly, at Dawson, Yukon, Secondary stems scarcely branching. (*Williams.*)

617. **N. Douglasii**, Hook.

Rather common on trees in the Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

618. **N. complanata**, (LINN.) HEUBEN.

On rocks in a ravine at Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898. (*Macoun.*)

95. **HOMALIA**, Brid.619. **H. Macounii**, C. M. & KINDB.

Neckera Macounii, C. M. & KINDB.; Kindb., Bryol. N. Am. & Eur. 19.

Common on rocks at Aroostook Falls and Woodstock, New Brunswick, 1899.

1112. **H. Jamesii**, SCHIMP.; Lesq. & James Mosses of N. America, 285,

Neckera Jamesii, Schimp.; Kindb., Bryol. N. Am. & Eur., 19.

On rocks, Newfoundland. (*Waghorne.*) On steep rocks in a ravine, Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898. (*Macoun.*)

98. **PTERIGYNANDRUM**, Hedw.623. **P. filiforme**, HEDW.

Abundant on rocks, Moose Mountain, Alta., 1897. (*Macoun.*) On trees at Sheep Camp, Dyea Creek, Alaska. (*Williams.*)

Subsp. **decipiens**, (WEB. & MOHR.) LIMPR.

On rocks, Newfoundland. (*Waghorne*.) On rocks at Margaree and Half Way Brook, Cape Breton Island, N.S., 1898. (*Macoun*.)
On rock, Lake Lindeman, Yukon. (*Williams*.)

99. **PTEROGONIUM**, Swartz.625 **P. brachypterum**, MITT.

Lindbergia brachyptera, Mitt.; Kindb., Bryol. N. Am. & Eur., 13.

On the trunk of *Ostrya Virginica*, near Hemlock Lake, Beechwood, Ottawa, Ont., May 16th, 1900. (*Macoun*.)

HYPOPTERYGIUM, Bridel.1113. **H. canadense**, KINDB., Revue Bryol.; 1899, 2.

Branch-leaves small, crowded and appressed, broadly ovate-apiculate, dentate nearly all around, narrowly limbate by hyaline narrow cells; other cells subrhombic, about 0.02 mm.; costa short; amphigastria rotundate, dentate limbate; costa confluent with the point. The naked part of the stem about 1 cm., the upper one scarcely longer. Capsules and male plants unknown.

On rocks near the coast in company with *Asplenium viride*, Skiddegate, Queen Charlotte Islands. Apparently rare. June, 1898., B.C. (*Dr. C. F. Newcombe*.)

100. **ANTITRICHIA**, Brid.1114. **A. gigantea**. (SULLIV. & LESQ.) KINDB., Revue Bryol. 1895.
A. curtipendula, Brid. var. *gigantea*, Cat. Can. Musci, p. 165.

On trees at Dyea Creek; on rocks at Skagway, Alaska. All sterile. (*Williams*.)

628. **A. Californica**, SULLIV.

Macouniella Cal formica, Sulliv.; Kindb. Bryol. N. Am. & Eur., 21.

Dyea and Dyea Creek, Alaska; fruiting. (*Williams*.)

101. **PTERYGOPHYLLUM**, Brid.629. **P. lucens**, (LINN.) BRID.

Port Etches, Alaska, Lat. 60° 30', June, 1892. (*J. M. Macoun*.)

102. **FABRONIA, Raddi.**

1115. **F. Ravenelii**, SULLIV.; Lesq. & James Mosses of N. America, 295.

On earth at Old Wives' Creek and Wood Mountain, Assa., June, 1895. (*Macoun.*)

104. **MYURELLA, Bruch & Schimp**

634. **M. julacea**, (VILL.) BRUCH & SCHIMP.

On rock, head of Lake Bennett, sterile; about roots of trees in damp places about Dawson. In fine fruit, April 23rd, 1899. (*Williams.*)

635. **M. apiculata**, BRUCH & SCHIMP.

M. tenerrima, Brid.; Kindb., Bryol. N. Am. & Eur., 45.

On earth at the foot of rock ledges at Dawson, Yukon; in fruit. (*Williams.*)

636. **M. Careyana**, SULLIV.

M. gracilis, Weinmann; Kindb., Bryol. N. Am. & Eur., 45.

On the face of rocks and earth along Credit River, near Credit Forks, Ont., October, 1892. (*Jas. White.*) On rocks in a ravine, Big Intervale, Margaree, Cape Breton Is and, N.S., July, 1898. (*Macoun.*)

105. **LESKEA, Hedw.**

This genus has been revised by Dr. G. N. Best, Rosemount, New Jersey, and the changes made below are copied from his work.

637. **L. polycarpa**, ENRH., var. **paludosa**, (HEDW.) SCH.

On trees, Niagara Falls, Ont., June 15th, 1884; on trees subject to inundation, Kamloops, B.C., June 29th, 1889. The above were referred to *L. polycarpa*, in Part VI., p. 168.

All specimens referred to *L. subobtusifolia*, Kindb., Part VI., p. 169 are also placed here. (*Macoun.*)

638. *L. subobtusifolia*, C. M. & KINDB.

On the bases of trees in inundated woods at Golden Lake, Ont., Sept. 27th, 1900. (*Macoun.*)

640. *L. nervosa*, MYRIN. var. *bulbifera*, (BRID.) BEST.

On rocks at the mouth of Michaud River, Rimouski Co., Que., Aug. 8th, 1881. (*Allen.*) On rocks, Buffalo Lake, Atha., Aug. 8th, 1888. (*J. M. Macoun.*) Both referred in Part VI., p. 169 to *L. nervosa*.

642. *L. pulvinata*, WAHL.

Roots of trees, Lac Bean, St. Francis River, July 10th, 1882; also on roots of trees, Tobique River, N.B., July, 1884. (*G. U. Hay.*) Both of the above were referred to *L. polycarpa* in Part VI., p. 168.

643. *L. Wollei*, AUST.

On rocks, Jumping Pound Creek, Rocky Mountains, Alta., June 14th, 1897. (*Macoun.*)

1116. *L. obscura*, HEDW.; Lesq. & James, Mosses of N. Am. 301.

On trees two miles above the railway bridge above Trenton, Ont., on the west side, Aug. 25th, 1866, referred to *L. polycarpa* in Part VI., p. 168; on bark of trees at Woodstock, N.B., July, 1899. (*Macoun.*)

1117. *L. intermedia*, BEST.

On trees near the Great Trenton boulder above Trenton, Ont., Aug. 25th, 1866. (*Macoun.*)

106. *LESCURÆA*, Schimp.**1118. *L. frigida*, KINDB.; Eur. & N. Am. Bryol., p. 26.**

Leaves from a subovate base gradually narrowed to the long-subulate or filiform-pointed acumen, recurved to it and distinctly decurrent; cells sublinear except the quadrate alar cells; costa sometimes long-excurrent. Stem-leaves generally entire; branch-leaves serrulate at the whole acumen, sometimes short-acuminate and faintly mamilllose. Capsules unknown. Stem subpinnate. Tufts dark brown or blackish, not glossy. Very distinct in its serrulate branch leaves and very narrow leaf cells.

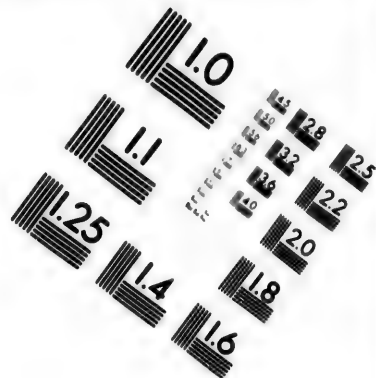
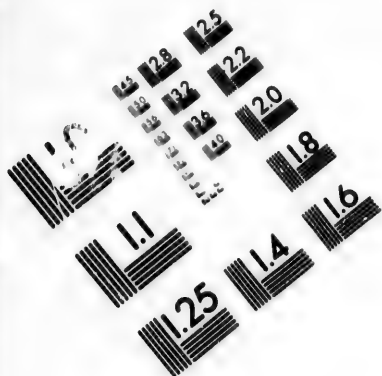
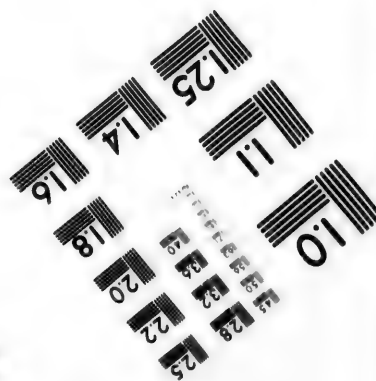
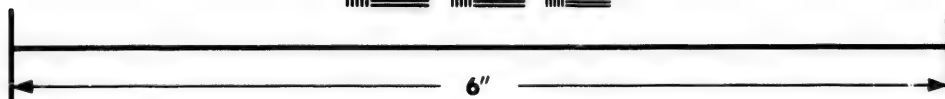
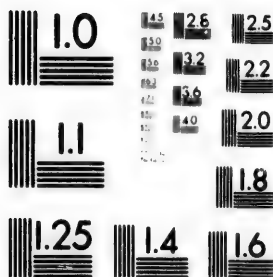


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On earth and rocks, Clearwater Lake, northern Labrador, July 31st, 1896. (*A. P. Low.*)

107. **ANOMODON**, Hook. & Taylor.

1119. **A. platyphyllus**, KINDB., Note on Can. Bryol., 1893.
A. obtusifolius, Cat. Can. Musci, p. 171 in part.

Leaves short, very broad, ovate or ovate-oblong, or from a cordate strongly papillose base slightly contracted to a lingulate blunt acumen. Perichetial leaves with subdentate strongly papillose base and narrow lingulate acumen. Capsule small, oval-oblong; segments rudimentary; lid short-conic, not apiculate; pedicel yellow very much shorter than in *A. apiculatus*.

On trees in woods west of the Beaver Meadow, west of Hull, Que., Oct., 1884; on trees in swamps at Belleville, Hastings Co., Ont., 1868. (*Macoun.*)

648. **A. apiculatus**, BRUCH & SCHIMP.

On rocks in woods, C  che Lake, Algonquin Park, Ont., June 9th, 1900. (*Macoun.*)

649. **A. viticulosus**, (LINN.) HOOK. & TAYL.

On a limestone ledge, Havelock, King's Co., N.B. (*J. Moser.*)
Limestone rocks, Credit Forks, Ont., Sept., 1892. (*Jas. White.*)
On rocks in a ravine, Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898. (*Macoun.*)

650. **A. heteroideus**, C. M. & KINDB.

On limestone rocks, Credit Forks, Ont., Sept. 1892. (*Jas. White.*)
On flat limestone rocks, Meech's Lake, near Chelsea, Que., Sept., 1893. (*Macoun.*)

1120. **A. glabellus**, KINDB.

On rocks, Mocse Mountain, alt. 7000 feet, Elbow River, Rocky Mountains, July 1st, 1897. (*Macoun.*)

1121. **A. Moseri**, KINDB., Note on Can. Bryol., 1893.

Leaves as in *A. nervosus* but smaller; cells more rotundate. Perichetial leaves narrowly ovate-oblong, obtusate or short-

acuminate, denticulate at least above the middle. Capsule lanceolate-cylindric, small mouthed; teeth pale; segments as high with a distinct basal membrane; lid apiculate; pedicel twice longer than in *A. nervosus*.

1122. **A. tectorum**, AL. BRAUN.

On rocks, Greenland. (*Berggren* fide *Kindberg*.) On rocks, Moose Mountain alt. 7500 feet, Elbow River, Rocky Mountains, July, 1897. (*Macoun*.) On rock in rather dry places, lakes Lebarge and Dawson, Yukon. (*Williams*.)

1123. **A. subrigidulus**, KINDB., Bryol. N. Am. & Eur., 11.

Differs from *A. tectorum* in the leaves being more distinctly recurved to the short acumen; middle cells round-oval; costa generally reaching to the acumen. Stem irregularly divided, not creeping. Capsule and lid as in *A. tectorum*; peristome not seen.

On rocks on the coast of Labrador. (*Waghorne*.)

108. **PLATYGYRIUM**, Bruch & Schimp.

651. **P. repens**, BRUCH & SCHIMP.

On old logs, Golden Lake, Ont., Sept. 27th, 1900. (*Macoun*.)

109. **PYLAISIA**, Bruch & Schimp.

652. **P. polyantha**, (SCHREBER) BRUCH & SCHIMP.

On trees at Credit Forks, and Edmonton, Ont., Oct., 1893. (*Jas. White*.) On old logs, Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898; on old logs, Otter Slide Creek, Algonquin Park, Ont., 1900; also at Golden Lake, Ont., 1900; on the bases of trees in woods, Elbow River, Rocky Mountains, July, 1897. (*Macoun*.) Sheep Camp, Dyea Creek, on wood, Alaska; at the bases of trees at Dawson. (*Williams*.)

Var. **rupestris**, BEST, N. var.

In thin loose mats, deep to dark green; stems prostrate, irregularly branched; stem leaves ovate-lanceolate, narrowly acuminate, subcomplanate, flat to secund, spreading-incurved, entire, costa obsolete, .25 to .35 mm. wide, .6 to .9 mm. long; median leaf cells linear-rhomboidal, 4 to 6 times as long as wide; alar cells pale,

oblong-quadrate, not numerous; pedicels slightly roughened; peristome as in type. With the appearance of a *Plagiothecium*.

On limestone rocks, Ottawa, Canada. (*Macoun*)

654. ***P. pseudo-platygyrium***, KINDB.

On the bases of trees at Baddeck, Cape Breton Island, N.S., July, 1898; on old logs at Leamy's Lake, near Hull, Que., Nov., 1896. (*Macoun*.)

1124. ***P. cyrtophylla***, KINDB., Bryol. N. Am. & Eur. p. 60.

Leaves broad-ovate, generally obtusate, obtuse, not or slightly recurved; cells oval, larger than in *P. intricata*. Branches crowded. Tufts green. Capsules unknown.

On old logs by the Peace River, Atha., above Dunvegan, Oct., 1872. (*Macoun*.)

1125. ***P. subdenticulata***, SCHIMP.; Lesq. & James, Mosses of N. America, 308.

On trees, Newfoundland. (*Waghorne*.)

655. ***P. Selwynii***, KINDB.

On an old log fence, Blueberry Point, Aylmer, Que., April 17th, 1900. (*Macoun*.)

656. ***P. Ontariensis***, C. M. & KINDB.

On old logs, Port Dover, Ont., Sept. 24th, 1890. This specimen was referred to *P. intricata*, in Part VI. On trees, Rustico Bay, Prince Edward Island, July 3rd, 1888. This specimen was referred to *P. polyantha* in Part VI. (*Macoun*.) On trees at Edmonton and Credit Forks, Ont., 1892. (*Jas, White*.)

Dr. A. J. Grout, in his revision of this genus, places all the above with *P. intricata*.

657. ***P. filari-acuminata***, C. M. & KINDB.

On trees in woods, C  che Lake, Algonquin Park, Ont., June 9th, 1900. (*Macoun*.)

658. **P. intricata**, BRUCH & SCHIMP.

Common on trees at Baddeck and Margaree, Cape Breton Island, N.S., 1898; on old fence rails at Brighton, Ont., 1893; at Golden Lake, Ont., 1900. (*Macoun.*) Dr. A. J. Grout, in the Bulletin of Torrey Botanical Club, Vol. XXIII., pages 223-233, publishes a preliminary Revision of the North American Isotheciaceae. We sent him all our mounted specimens for examination, and the changes made by him on the returned specimens are given below.

Under *Pylaisia polyantha* he places *P. Ontariensis*, as a synonym, while the specimens entered now on another page are placed under *P. intricata*.

P. pseudo-platygyrium and *P. filari-acuminata*, are reduced to one and take the name of *Pylaisiella polyantha pseudo-platygyria*. (Kindb.) *P. Selwynii*, Kindb. becomes a synonym of *P. intricata*.

P. revolutifolia Kindb. is referred to *Entodon repens*, (*Platygyrium repens*. Bruch and Schimp.)

More work is necessary on this genus before our specimens will be satisfactorily arranged.

110. **HOMALOTHECIUM**, Bruch & Schimp.662. **H. sericeoides**, C. M. & KINDB.

On rocks, Moose Mountain, Elbow River, Alta., July 1st, 1897. (*Macoun.*)

663. **H. sericeum**, LINN.

On earth by the sea near the Indian Village, Comox, Vancouver Island, June 20th, 1893. (*Macoun.*)

111. **ENTODON**, C. Muell.667. **E. Macounii**, C. M. & KINDB.

On an elm log in swampy woods, Rideau Park, Ottawa, Ont., April 28th, 1900; on earth near the Hogsback, Rideau River, near Ottawa, May 2nd, 1897. (*Macoun.*)

669. **E. seductrix**, (HEDW.) C. MUELL.

On earth in woods, Niagara-on-the-Lake, Ont., June 26th, 1892; on old logs, Camlachie, Lambton Co., Ont., June 1901. (*Macoun.*)

1126. **E. Sullivantii**, C. MUELL.; Lesq. & James' Mosses of N. America, 313.

On logs at Edmonton, Ont., Nov. 15th, 1892; also creeping closely on rotten logs at Edmonton, Ont., Oct. 15th, 1892. (*Jas. White.*)

1127. **E. orthocarpus**, (LA PYL.) LINDB.

On an island in the Yukon River, about 10 miles below Fort Selkirk. On ground under heavy spruce forest. This species has before been reported only from Colorado and Newfoundland in North America. (*Williams.*)

112. **CLIMACIUM**, Web. & Mohr.

672. **C. dendroides**, WEB. & MOHR.

Very abundant on old logs in a swamp at Golden Lake, Renfrew Co., Ont. In very fine fruit Sept. 27th, 1900. (*Macoun.*) Cañon City, Dyea Creek, Alaska; Marsh Lake and Klondike River bottom near its mouth. Not fruiting. (*Williams.*)

Var. **Oregonense**, REN. & CARD.

Shore of Lake Marsh, Yukon, on gravel; sterile. (*Williams.*)

673. **C. Americanum**, BRID.

Roundhouse woods, near Niagara Falls, Ont., May 20th, 1901. (*Macoun.*)

674. **C. Ruthenicum**, (WEINM.) LINDB.

Port Etches, Alaska, Lat. 60° 30', June 18th, 1892. (*J. M. Macoun.*)

113. **ORTHOTHECIUM**, Bruch & Schimp.

678. **O. chryseum**, BRUCH & SCHIMP.

On earth along Bragg's Creek, Elbow River, Rocky Mountains, July 9th, 1897. (*Macoun.*) Skagway and Lake Bennett. (*Williams.*)

114. **PSEUDOLESKEA**, Bruch & Schimp.679. **P. atrovirens**, (DICKS.) BR. EUR.*P. patens*, LIMPR.; Ren. & Card., Bot. Gaz. Vol. XXX., p. 22.*P. atro-virens*, subsp. *tenella*, Kindb., Bryol. N. Am. & Eur., 50.

Labrador and Newfoundland. (*Waghorne*.) On rocks, Dawson route, west of Lake Superior, July 25th, 1872, referred in Part VI. to *Leskea polycarpa*; on rocks, Mount Benson, near Nanaimo, Vancouver Island, 1887 and 1893. Referred to *P. oligoclada* in Part VI. On rocks at Sicamous, B.C., July 3rd, 1889, referred to *P. falcicuspis* in Part VI. On rocks, Crow's Nest Lake, Rocky Mountains, Aug. 3rd, 1897. (*Macoun*.)

680. **P. oligoclada**, KINDB.

On damp rocks, Mount Benson, near Nanaimo, Vancouver Island, June 8th, 1887 and July 10th, 1893; on rocks at the Illicilewaet Cañon, near Revelstoke, B.C., May 18th, 1890. (*Macoun*.)

681. **P. denudata**, KINDB.; Best, Torr. Bull., Vol. XXIX., p. 229.

Type locality as in Part VI.

Var. **Holzingeri**, BEST. NEW. var.Cape Chudleigh, Hudson Strait, Aug. 8th, 1884. (*Dr. R. Bell*.)684. **P. rigescens**, (WILS.) LINDB.*P. stenophylla*, Ren. & Card.; Cat. Can. Pl. Part, VI., 181.

Quite common on stems of alder and on stones on damp mountain slopes in Roger's Pass, Selkirk Mountains, B.C., Aug. 5th and July 31st, 1890; on rocks, mountains north of Griffin Lake in the Gold Range, B.C., Aug. 9th, 1889. (*Macoun*.)

683. **P. radicata**, (MITT.) LESQ. & JAMES.

Labrador and White Bay, Newfoundland. (*Waghorne*.) On rocks, Roger's Pass, Selkirk Mountains, B.C., July 29th and Aug. 2nd, 1890; on rocks, mountains, north of Griffin Lake, B.C., Aug. 11th, 1889; on rocks, Yale, B.C., May 18th, 1875; on rocks at Quesnel, B.C., May 29th, 1875; on rocks, Moose Mountain, Elbow River, Alta., July 4th, 1897. (*Macoun*.) Lake Lindeman, Yukon. (*Williams*.)

Var. **compacta**, Best. Bull. Torr. Bot. Club, Vol. XXVII.,
231.

In intricate tufts or loose mats, dark green to blackish, branches often with yellow-green tips; stems 2-3 cm. long; branches short, turgid; stem-leaves not rarely straight; median leaf-cells oval-rhombic to oblong-hexagonal.

On rocks in a brook in Roger's Pass, August 21st, 1885 and July 31st, 1890; also on rock three miles below Hector, Rocky Mountains, B.C., August 13th, 1890. (*Macoun*.)

1198. **P. substriata**, BEST.; Bull. Torr. Bot. Club., Vol. XXVII.,
p. 233.

In appressed, subshining tufts, yellowish green to golden-brown; stems prostrate, radicle 2-4 cm. long, pinnately branched; branches suberect, simple, scarcely curved; paraphyllia few, multi-form; stem leaves erect-spreading, straight, deeply biplicate, oval-oblong, gradually acute or acuminate (acumen shorter than body), 8-1 mm. long, 3-4 mm. wide; margins strongly recurved to nearly apex, serrate above; costa toothed, subpercurrent; stem-leaves smooth, clear; basal, oblong-linear in 2 or 3 rows; alar quadrate, rugose, thick-walled, filling the space between folds and margins, extending upwards and becoming oblong; apical linear; median sublinear .006 mm. wide, 4-6 times as long.

Type specimens collected on rocks three miles below Hector, on the Canadian Pacific Railway, B.C., Aug. 13th, 1890. It was originally numbered 484 and named *P. atrovirens* by Dr. Kindberg.

On rock along the shore of Lake Lindeman, Yukon (*Williams*.)

We have followed Dr. Best in the arrangement of our specimens of this genus as we believe he has done good and careful work.

1199. **P. pallida**, BEST. var. **flescens**, BEST.

Head of Lake Bennett, Yukon. (*Williams*.)

115. **HETEROCLADIUM**, Bruch & Schimp.

687. **H. dimorphum**, BR. EUR.

H. squarrosulum (Voit.); Kindb. Bryol. N. Am. & Eur., 46;
Best, Bull. Torr. Bot. Club, Vol. XXVIII., p. 127.

On rocks at Hector, Rocky Mountain, B.C., Aug. 15th, 1890.
Referred to *Pseudoleskea atrovirens* in Part VI. (*Macoun*.)

688. **H. Macounii**, BEST, Bull. Torr. Bot. Club, Vol. XXVIII., p. 127.

H. heteropterum, Can. Cat. Pt. VI., p. 182.

Plants small, in dense, spreading tufts, yellowish green to golden brown. Stems without central strand, stoloniform, 3 to 5 cm. long, irregularly branched; stems and branches curved at the tips; larger branches (secondary stems) pinnate or bipinnate, often subfasciculate, ascending-erect; paraphyllia few, ovate or linear-lanceolate, serrate; stem-leaves close, appressed when dry, erect-spreading when moist, subsecund, narrowly costate to the middle, .3 to .4 mm. wide, .5 to .7 mm. long; from a cordate, subclasping base, ovate, gradually to abruptly acuminate, spreading, tips recurved, margins plane, papillate-serrulate; larger branch-leaves ovate-lanceolate, long-acuminate, serrate, more or less secund; cells of the basal-central area of stem-leaves sub-linear, .005 to .007 mm. wide, 3 to 5 times long, gradually passing into the quadrate cells of the basal angles and margins and becoming roundish quadrate to rhombic-oblong above, each cell with usually two small papillæ on both surfaces near the ends of its long diameter; apical cells of smaller branch-leaves quadrate, crowned with two papillæ. Dioecious; perichetial bracts whitish, inner long, acuminate, flexuous-spreading, serrate; pedicels smooth, shining, flexuous, about 1.5 cm. long; capsules oblong, gradually tapering to a short neck, horizontal, pachydermous, reddish brown, lightly constricted under the mouth and subpendant when deoperculate; urn .8 mm. wide, 1.5 to 2 mm. long; exothelial cells elliptical-oblong; exostomial teeth yellowish brown, strongly lamellate, confluent into a reddish basal band; endostomial band nearly one half the length of the teeth; segments somewhat open, as long as the teeth; cilia 1 to 2, nodose-appendiculate; annulus broad, of two rows of cells, deciduous; operculum conic, obliquely rostellate; spores .009 to .012; matures in spring.

Type specimen collected on damp rocks above the railway bridge at Goldstream, 10 miles from Victoria, Vancouver Island, June 2nd, 1893. This was named *P. Vancouveriense* by Kindberg. On May 18th, 1887, the same species was collected in the same place and named *P. heteropterum*, Bruch. Fine specimens were collected on Protection Island and Mount Benson, near Nanaimo, July, 1893; also on Mount Arrowsmith, Vancouver Island, July

19th, 1887. (*Macoun.*) Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

690. ***H. procurrens***, (MITT.) RAN. & HERVEY.

H. aberrans, Ren. & Card. ; Can. Cat. Pt. VI., 183.

Specimens from Roger's Pass and Revelstoke are correctly named. (*Macoun.*) On rocks at Skagway and Cañon City, Alaska. (*Macoun.*)

689. ***H. heteropterioides***, BEST ; Bull. Torr. Bot. Club, Vol. XXVIII., 128.

H. heteropt. um, Can. Cat. Pt. VI., p. 182 in part.

Plants quite small, in intricate spreading tufts, dark green. Stems, without central strand, 3-6 cm. long, variously divided and irregularly branched ; larger branches (secondary stems) ascending-erect, pinnate to bipinnate ; branchlets fasciculate, often tufted ; leaves of primary stems erect-spreading, lower sometimes recurved at tips, papillose, .25-.35 mm. wide, .4-.5 mm. long ; from a cordate, subdecurrent base, triangular to ovate-lanceolate, finely pointed, margins plane, papillose-denticulate, costa thin, usually short, rarely narrow and longer, reaching the middle ; leaves of secondary stems appressed when dry, erect-spreading when moist, cordate-triangular, acute to acuminate, margins papillose-serrulate ; ultimate branch-leaves ovate, acute to narrowly acuminate, cells of the basal-central area of the stem leaves, not so clearly differentiated as in the preceding species, oblong to sublinear about .006 mm. wide, 2-4 times as long, those of the basal margins quadrate, passing into oval-oblong above, each cell with 2-5 small bead-like, irregularly distributed papillæ on both surfaces ; apical cells of ultimate branch-leaves quadrate to oblong, crowned with 2-4 papillæ. Dioecious : perichetial bracts whitish, flexuose-spreading, inner long and narrowly acuminate, margins denticulate, pedicels smooth, flexuose-curved, about 1.5 cm. long ; capsule oval, horizontal, short-necked, pachydermous, contracted under the mouth when deoperculate ; urn 1.5 mm. long, .7 mm. wide ; exothecial cells thick-walled, oval to oblong ; annulus broad, of 2-3 rows of large cells, deciduous ; exostomial teeth yellowish, strongly lamellate, confluent at the base ; endostomial band about one-half the length of the teeth ; segments slightly

open ; cilia 1-2, nodose ; operculum conic-rostrate, straight or oblique, nearly as long as capsule ; spores smooth, .010-.012 mm. ; matures in summer ; grows on rocks and stones in damp places. Type locality, Washington ; on rocks, Forward Inlet, Gulf of Georgia, B.C., 1885. (*Dr. G. M. Dawson.*) On rocks at Hastings, B.C., April 6th, 1889. (*Macoun.*)

Var. *flescens*, BEST. Bull. Torr. Bot. Club, Vol. XXVIII. 129.

H. heteropterum, Can. Cat. Pt. VI. 182 in part.

In widely spreading tufts, dark green passing into yellowish green. Stems prostrate, 8-10 cm. long, or longer, sparingly branched ; stems and branches filiform ; leaves smaller ; papillæ as in type ; sterile.

On rocks at Hastings, B.C., April 13th, 1889 ; on rocks Nanaimo River, Vancouver Island, April 27th, 1887 ; also on rocks at Goldstream, near Victoria, Vancouver Island, June 2nd, 1893. (*Macoun.*)

PSEUDOLESKEELLA, Kindb.

1130. *P. occidentalis*, (SULLIV.) Kindb., Bryol. N. Am. & Eur. p. 48.

Hypnum occidentalis, S. & L. Icon. Musc. Suppl. 105.

On rocks in a ravine at Goldstream, Vancouver Island, June 2nd, 1893 ; along Nanaimo River, Vancouver Island, April 27th, 1887 ; on rocks, Mount Finlayson, near Victoria, Vancouver Island, May 31st, 1887 ; on rocks by the Colquitz River, near Victoria, Vancouver Island, June 1st, 1893. (*Macoun.*) A part of the above specimens were named *H. Vancouveriense* by Kindberg and all of them *Hypnum occidentalis*, Sulliv., by Dr. Best in the paper cited on the preceding pages. We have followed Dr. Best in the disposition of our specimens of the genera *Leskea*, *Pseudoleskea*, *Heterocladium*, *Thuidium* and *Claopodium*.

116. THUIDIUM, Schimp.

695. *T. gracile*, BRUCH & SCHIMP.

T. microphyllum, Sw. ; Best, Bull. Torr. Bot. Club, Vol. XXIII., p. 87.

On stones at Credit Forks, Ont. (*Jas. White.*)

1131. **T. Virginianum**, (BRID.) LINDB.; Best, Bull. Torr. Bot. Club, Vol. XXIII., p. 87.

T. gracile. Br. & Sch. var. *Lancastriense*, Sulliv. & Lesq. Cat. Can. Cat. Pt. VI., 184.

Woods west of Hull, Que., April, 1902. (*Macoun.*)

697. **T. recognitum**, (HEDW.) LINDB.

Yukon River above Fort Selkirk and common about Dawson, Yukon. (*Williams.*)

1132. **T. pseudo-gracile**, KINDB., Bryol. N. Am. & Eur. 56.

Differs from *T. Virginianum* : Leaves of stem broader, from a very broad base, more abruptly narrowed to the often falcate and generally not long acumens, entire, nearly smooth; branch-leaves entire or faintly denticulate. Capsules unknown. Differs also from *T. scitum* : Leaves larger and broader; costa percurrent or excurrent. Stem-leaves shorter and more broadly revolute; branch-leaves ovate-oblong, acuminate or acute.

On old logs in woods near Leamington, Ont., Sept. 19th, 1890. (*Macoun.*)

698. **T. delicatulum**, (LINN.) MITT., var. **repens**, Kindb., Ott. Nat., Vol. XIV., 79.

Stem creeping and rooting.

On roots of trees at Woodstock, N.B., July 3rd, 1899. (*Macoun.*)

699. **T. abietinum**, BRUCH & SCHIMP.

On dry limestone rocks, Queenston Heights, Ont., May, 1901. (*Macoun.*) Tagish Custom House and common about Dawson, Yukon, on earth and rock. (*Williams.*)

700. **T. Blandowii**, (WEB. & MOHR.) BRUCH & SCHIMP.

At the head of Lake Bennett, also near the mouth of Bonanza Creek, Yukon; in fine fruit, July 9th, 1899. (*Williams.*)

701. **T. Whippleanum**, (SULLIV.) KINDB.

* *Cloopidium Whippleanum*, (Sulliv.) Best, Bull. Torr. Bot. Club, Vol. XXIV., p. 428.

On rocks, Pier's farm, near Victoria, Vancouver Island, May 9th, 1893; on earth by a brook, Point Holmes, near Comox, V.I., July 3rd, 1893. (*Macoun.*)

1133. **T. Philiberti**, LIMPRICHT. 1895.

On the bases of trees in woods. Overlooked but doubtless not rare. In woods, Big Intervale, Margaree, Cape Breton Island, N.S., July 22nd, 1898; also in a ravine at Woodstock, N.B., July 4th, 1899. On earth, Pelee Point, Essex Co., Ont., June 4th, 1901. On the bases of trees, Cascades, Gatineau River, Que., June, 1900. (*Macoun.*) In woods, New Brunswick. (*J. Moser.*) Klondike River bottom near its mouth, Yukon. Sterile. (*Williams.*)

1134. **T. leuconeuron**, SULLIV. & LESQ.

Claopodium leuconeuron, (S. & L.) Ren. & Card.

On boulders, Sooke Lake Road, near Goldstream, Vancouver Island, June 2nd, 1893. (*Macoun.*)

1135. **T. Bolanderi**, (BEST); Bull. Torr. Bot. Club, Vol. XXIV., p. 431.

On rocks at Sproat, Columbia River, B.C., June 27th, 1890; on rocks, Revelstoke, B.C., May 5th, 1890; on rocks, Sicamous, B.C., July 16th, 1889; on rocks at Yale, B.C., Dec. 9th, 1872; on rocks, Cedar Hill, Victoria, Vancouver Island, April 21st, 1887. (*Macoun.*) On rocks, Kadiak Island, Alaska, Sept. 22nd, 1891. (*J. M. Macoun.*) On rocks, Malespina Inlet, B.C., July, 1885. (*Dr. G. M. Dawson.*) On rocks, Griffin Lake, B.C., Aug. 11th, 1889. All the above specimens have been taken out of *T. crispifolium*.

1136. **T. pseud-abietinum**, KINDB. Note on Canad. Bryol. 1893.

Leaves orange at insertion; middle cells oval-oblong. Stem-leaves ovate, short-acuminate faintly denticulate above. Branch-leaves ovate-oval, sub-obtuse more distinctly denticulate, very opaque and mamillate or papillose on both sides. Stem brown-tomentose; branches short and distant. Lid of capsule not seen.

Labrador. (*Waghorne.*) On earth in a swamp at Britannia, 6 miles west of Ottawa, Ont., Sept. 11th, 1890. Referred in Part VI., p. 186 to *T. Blandowii*. (*Macoun.*)

1137. **T. pellucinerve**, MITT.

Claopodium pellucinerve, (Mitt.) Best.

Collected at Cañon City, Dyea Creek, Alaska. (*Williams.*)

ELODIUM, Sulliv.

1188. **E. paludosum**, SULLIV.; Lesq. & James Mosses of N. Am p. 329.

On hummocks in swamps at Edmonton, Ont., Oct. 1892 and Aug., 1893. (*Jas. White.*) Queenston and "roundhouse woods," near Niagara Falls, Ont., 1901. (*Macoun.*)

118. CAMPOTHECIUM, Schimp.

705. **C. lutescens**, BRUCH & SCHIMP.

Sheep Creek, near Juneau, Alaska. (*Miss G. Cooley.*) Sheep Camp, Dyea Creek, Alaska; on cotton-wood. (*Williams.*)

1139. **C. pinnatifidum**, SULLIV. & LESQ.; Lesq. & James Mosses of N. Am., p. 333.

On rotten logs, Cedar Hill, near Victoria, Vancouver Island, April 16th, 1887. Mixed with *Scleropodium caespitosum*. Determined by Dr. A. J. Grout. (*Macoun.*)

709. **C. Nuttallii**, BRUCH & SCHIMP.

Skagway, Alaska. (*Williams.*)

712. **C. nitens**, (SCHREB.) SCHIMP.

In a bog at Galt, Ont., June, 28th, 1901. (*Macoun.*) Lake Lindeman, sterile; mouth of Little Salmon River in fruit; at Dawson, Yukon, common and fruiting abundantly. Capsules in fine condition, June 18th, 1899. (*Williams.*)

1140. **C. arenarium**, LESQ.; Lesq. & James Mosses of N. Am. 333.

On the sand spit at Comox, Vancouver Island, July 3rd, 1893. (*Macoun.*)

119. BRACTRYTHECIUM, Schimp.

714. **B. lætum**, BRID.

On old logs and rocks Cache Lake, Algonquin Park, Ont., 1900; on earth at Carleton Place, Ont., May, 1900. (*Macoun.*) Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

715. **B. digastrum**, C. M. & KINDB.

On rocks by the Gatineau River, at the Cascades, Que., June 23rd, 1900; on stones in woods, Big Intervale, Margaree, Cape Breton, Island, N.S., July 15th, 1898. (*Macoun.*)

1141. **B. subglaciale**, (KINDB.) N. SP.

On rocks at Fort Chimo, Ungava, Sept. 9th, 1896. (*A. P. Low.*)

1142. **B. cyrtophyllum**, KINDB., OTT. NAT., Vol. XIV. 63.

B. acuminatum var. *cyrtophyllum*, Cat. Can. Pt. VI., 191.

On elm trunks in woods at Carleton Place, Ont., May 12th, 1900. (*Macoun.*)

718. **B. salebrosum**, BRUCH & SCHIMP.

On trees and boulders in woods at Baddeck and Margaree, Cape Breton Island, N.S., July, 1898; on earth C  che Lake, Algonquin Park, Ont., 1900; on stones in woods, Foster's Flats and Queenston Heights, Ont., May, 1901. (*Macoun.*) Lake Lindenman and Dawson, Yukon. (*Williams.*)

Var. **densum**, BRUCH & SCHIMP.

North of Little Salmon River, Yukon. I refer specimens here, with rather narrower leaves more closely placed on stems and branches than the preceding. (*Williams.*)

Var. **Waghornei**, REN. & CARD., Bot. Gaz., Vol. XIX, p. 238.

A peculiar form, distinguishable from the type by the tufts being very dense, the stems erect, turgid, not radiculose, the leaves more crowded, imbricate, and the lid mamillate. Differs from the allied *B. mamilligerum*, Kindb., in the leaves imbricate, not patulous when dry, and the stems not radiculose. Much smaller than *B. turgidum*, Hartm. Monoecious.

Battle Harbour, Labrador. 1891. (*Waghorne.*)

719. **B. glareosum**, BRUCH.

Dr. A. J. Grout believes the specimens collected at Revelstoke and mentioned in Part VI., p. 192, to be *B. flexicaule*, Ren. & Card.

721 **B. lævisetum**, KINDB.

Dr. A. J. Grout believes the type specimen of this species to *B. salebrosum* (Hoffm.) Batsch.

On stones in a ravine at Woodstock, New Brunswick, July, 1899; on the bases of trees, Blueberry Point, Aylmer, Que., April 17th, 1900. (*Macoun.*)

723. **B. albicans**, BRUCH & SCHIMP.

On earth in woods, Leamy's Lake, Hull, Que., Nov. 9th, 1896. (*Macoun.*) On rock at Skagway, Alaska; sterile. (*Williams.*)

724. **B. harpidioides**, C. M. & KINDB.

On earth in woods, Beechwood Cemetery, Ottawa, Ont., May 16th, 1900. (*Macoun.*)

1143. **B. Idahense**, REN. & CARD.

On earth and rock at Dawson, Yukon. (*Williams.*)

733. **B. velutinum**, BRUCH & SCHIMP.

On earth at the bases of trees, Foster's Flats, Niagara River, Ont., May 16th, 1901. (*Macoun.*)

734. **B. Starkei**, BRUCH & SCHIMP.

On earth in woods, C  che Lake, Algonquin Park, Ont., June, 1900. (*Macoun.*) Lake Lindeman, Yukon. (*Williams.*)

735. **B.   dipodium**, MITT.

On earth in woods, C  che Lake, Algonquin Park, Ont., June, 1900. (*Macoun.*)

737. **B. reflexum**, (STARK.) BRUCH & SCHIMP.

Eurhynchium reflexum, STARK.; Kindb., Bryol. N. Am. & Eur. 101.

On boulders, Meech's Lake, Chelsea, Que., Sept. 23rd, 1893. On stones in a brook, Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898. (*Macoun.*) On a knoll in woods at Edmonton, Ont., 1892. (*Jas. White.*) Lake Lindeman, Yukon. (*Williams.*)

Var. **Demetrii**, (REN. & CARD.) Bot. Gaz. Vol. XIX, p. 239.

Differs from the genuine form in the stronger habit, the thicker erect branches, and the broader softer leaves.

Squaw Island, Labrador, 1891. (*Waghorne.*)

738. **B. rutabulum**, BRUCH & SCHIMP.

On earth, Foster's Flats, Niagara River, Ont., May, 1901. (*Macoun.*)

739. **B. spurio-rutabulum**, C. M. & KINDB.

Dr. A. J. Grout reduces this species and No. 742 to *B. asperinum*, Mitt. Kindberg does not recognize this species in my collections. On old logs in woods near Victoria and at Comox, Vancouver Island, 1893. (*Macoun.*)

748. **B. campestre**, BRUCH & SCHIMP.

On earth in woods at C  che Lake, Algonquin, Park, Ont., June 1900. (*Macoun.*)

749. **B. rivulare**, BRUCH & SCHIMP.

Port Etches, Alaska, Lat. 60° 30', 1892. (*J. M. Macoun.*) On stones in spring brooks, Big Intervale, Margaree, Cape Breton, Island, N.S., July, 1898. (*Macoun.*) St. Paul Island, Behring Sea. (*Dr. Merriam.*)

751. **B. populeum**, BRUCH & SCHIMP.

On rocks and stones in damp woods, Margaree, Cape Breton Island, N.S., July, 1898; on boulders in woods, C  che Lake, Algonquin Park, Ont., June, 1900. (*Macoun.*)

752. **B. plumosum**, BRUCH & SCHIMP.

On rocks, Aroostook Falls, N.B., 1899; on rocks in brooks and damp woods, Margaree, and Half-Way House, Cape Breton Island, 1898; abundant on rocks, Meech's Lake, Chelsea, Que., Sept., 1893; on stones in woods, C  che Lake, Algonquin Park, Ont., 1900. (*Macoun.*) Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

1144. **B. cavernosum**, KINDB., Revue Bryol., 1895.

Differs from *B. rutabuliforme* : Leaves more concave, recurved on both sides to acumen ; alar and lower basal cells small, green and well-defined. Lid of capsule longer pointed or costellate.

On rocks near high-water mark, Spanish Mills, and on moist rocks, Credit Forks, Ont., 1892-93. (*Jas. White.*)

1145. **B. Hillebrandi**, LESQ.; Lesq. & James, Mosses of N. America, 340.

On old logs in woods, Carleton Place, Ont., May 12th, 1900. (*Macoun.*)

1146. **B. biventreosum**, MUELL.; Lesq. & James, Mosses of N. America, 338.

On old logs in woods, Carleton Place, Ont., May 12th 1900. (*Macoun.*)

1147. **B. calicareum**, KINDB., Revue Bryol., 1895.

Leaves crowded, long-acuminate, filiform-pointed, more or less recurved, incurved-falcate when dry, patent when moist; angular cells short, special alar cells few, hyaline and much larger, the others linear. Stem-leaves with a broad base; costa short, generally vanishing near the middle. Branch-leaves narrow; costa nearly reaching the acumen. Capsule small, arcuate; cilia not appendiculate; lid apiculate; pedicel smooth about 1 cm. long. Tufts dense, radiculose, green, faintly glossy. Stem irregularly divided; branches not compressed. Habit of *B. intricatum*.

Abundant on flat limestone rocks in Rockcliffe Park, Ottawa, Ont., Oct., 1892, May, 1899, and June, 1900. (*Macoun.*)

1148. **B. intricatum**, HEDW.; KINDB., Bryol. N. Am. & Eur. 118.

On damp rocks, Meech's Lake, Chelsea, Que., Sept. 23rd, 1893. New to America. (*Macoun.*)

1149. **B. subintricatum**, KINDB., Revue Bryol., 1895.

Leaves narrowly ovate-oblong, or ovate-lanceolate nearly uniform (those of the branches not much narrower), nearly crowded (at least those of the stem), decurrent, not falcate when dry; alar cells few, the others linear; costa vanishing above the middle.

Capsule arcuate; pedicel very rough. Stem subpinnate. Differs from *B. velutinum* and *B. intricatum*: Leaves faintly denticulate filiform-pointed; alar cells often dilated. Perichetial leaves nearly entire with a long filiform deflexed point. Capsule oblong-cylindric, arcuate. Tufts loose, sparingly radiculose dusky green. Branches faintly compressed.

On trunks, near their bases, Sea's farm, near Victoria, Vancouver Island, 1893. (*Macoun*.)

1150. **B. erythrorrhizon**, BRUCH & SCHIMP.

On earth, common at Dawson, Yukon. (*Williams*.) Canaan Forks, Queen's Co., N.B. (*J. Moser*.)

This specimen was referred to *Eurhynchium hians* in Part VI. 206.

1151. **B. cirrosum**, SCHWAEGR.

Cirriphyllum cirrosum (Schwaegr.) Grout.

In thick mats on rocks by a stream. Collected in rather old fruit, August 27th, 1899, at Skagway, Alaska. (*Williams*.)

1152. **B. petrophyllum**, R. S. WILLIAMS, Bull. of New York Bot. Gar., Vol. II., p. 136, 1901.

In low dense tufts or sometimes in thin mats with long creeping stems and short subpinnate branches. Stem leaves 1.5 mm. long by .04 mm. wide, narrowly ovate-lanceolate, about one-half costate, serrulate all round, more or less decurrent and margin reflexed near base, not very concave, and scarcely or not plicate. Median leaf-cells linear, flexuous up to .065 mm. long, and .005 mm. wide. Alar cells short and broad, not forming a distinct cluster. Branch leaves very similar to stem leaves but mostly a little smaller with longer costa ending in spine on back and adjacent cells, sometimes papillose by the projecting upper ends. Inner perichetial leaves pale ecostate, gradually narrowed to a slender, flexuous, serrulate point, with rarely 1 or 2 coarse teeth at its base. Capsule nodding, curved with lid about 2.5 mm. long and 1 mm. broad. Lid conical its height about equal to basal diameter. Annulus of two rows of cells. Teeth of peristome hyaline bordered, papillose above, outer plates striate, inner lamellae about 30, segments without rounded perforations, more or less split along the keel with mostly 2 appendiculate cilia.

between. Seta rough throughout, up to 1 c.m. high. Smooth spores up to .011 mm.

On rock at Dawson, Yukon. In good fruit, June 24th, 1898. This species is evidently nearest to *suberythrorrhizon* but differs in the rough pedicel, leaves narrower, less serrate and plicate, and cilia appendiculate. (Williams.)

120. **SCLEROPodium**, Schimp.

754. **S. caespitosum**, (Wils.) Br. & Sch.

On rocks, Drew's Harbour, Vancouver Island, 1885. (Dr. G. M. Dawson.) On rocks, Lake Athabasca, Sept., 1875. (Macoun.)

757. **S. illecebrum**, (Linn.) Br. & Sch.

On rocks in Pier's woods, near Victoria, Vancouver Island, May 8th, 1893; on wet rocks, Agassiz, B.C., May 8th, 1889; the latter specimen was referred in Part VI., p. 202 to *S. obtusifolium* by Kindberg. (Macoun.)

1153. **S. colpophyllum**, (Sulliv.) Grout.

Cedar Hill, near Victoria and on the bases of trees near Esquimalt, Vancouver Island, 1893; also a doubtful specimen (named by Kindberg) at Otter Lake Creek, Algonquin Park, Ont., July 10th, 1900. (Macoun.)

Var. **attenuatum**, Grout.

Stoloniferous, much more slender, with more distant, loosely spreading leaves; leaves much narrower with a longer and more slender acumination; branch leaves varying from 1.7 x 0.54 mm. on the longer branches to 1 x 0.2 on the smaller.

Type from perpendicular rocks at Goldstream, near Victoria, Vancouver Island, June 2nd, 1893. (Macoun.) I have followed Dr. A. J. Grout in the arrangement of the specimens of this genus. See his revision of the North America species of *Scleropodium* in the Contributions of the Department of Botany of Columbia University, No. 165.

121. **ISOTHECIUM**, Brid.

1154. **I. brachycladon**, Kindb., Bryol. N. Am. & Eur. 35.

Differs from *I. aplocladum*: Leaves smaller; those of the stem subovate, nearly entire, with very short or indistinct costa; branch-

leaves sometimes short-acuminate. Stem creeping, irregularly divided; branches distant, very short, slightly curved not julaceous. Tufts bright green. Capsules unknown. Habit of *I. striatum*.

Under damp rocks, Sea's Farm, near Victoria, Vancouver Island, May 6th, 1893. (*Macoun*.)

Dr. A. J. Grout writes on this specimen "Not *aplocladon*. Probably *myurellum*."

1155. ***I. hylocomioides***, KINDB., BRYOL. N. Am. & Eur. 35.

Differs from *I. Breweri*. Leaves shorter, subovate, generally subobtusate, more sharply serrate above to below the middle; apical cells oval-oblong, middle and lower linear, alar disposed on a short space. Perichetial leaves minutely denticulate. Capsule cylindric-oblong sometimes curved; teeth pale yellow; cilia short; lid not seen. Tufts loose, green or brown-green. Stem bipinnate; branches numerous not julaceous, often with short flagellæ.

On rocks in the ravine at Goldstream, near Victoria, Vancouver Island, June 2nd, 1893; on damp rocks, Victoria Arm, Victoria, Vancouver Island, May 11th, 1893. (*Macoun*.)

Dr. A. J. Grout refers the above specimens to *I. stoloniferum*.

1156. ***I. thamnioides***, KINDB., BRYOL. N. Am. & Eur. 36.

Stem-leaves denticulate below, serrate or twice serrulate above; upper cells rhombic or rhomboidal. Branch-leaves serrate nearly all around; upper cells lanceolate-linear, middle and lower sublinear, alar disposed on a short space. Perichetial leaves serrate. Capsule cylindric, inclined or slightly curved; lid short-acuminate; teeth yellow; cilia short appendiculate. Tufts loose, glossy green. Branches long-attenuate nearly crowded not julaceous.

On rocks in the ravine at Goldstream, Vancouver Island, June 2nd, 1893. (*Macoun*.)

1157. ***I. obtusatum***, KINDB., REVUE BRYOL.; 1895.

Stem-leaves broad-ovate, short, acuminate, acute, recurved below, serrate above; branch-leaves smaller, suboval, obtusate often obtuse; upper (sometimes also the middle) cells oval or broad-oblong, middle narrowly oblong or sublanceolate; costa reaching to $\frac{3}{4}$ or shorter. Capsule oblong; teeth yellowish; cilia nodose,

shorter ; lid muticous, acute. Stem pinnate ; branches generally distant, often flagelliferous. Tufts dark green.

On rocks, Parson's Mountain, near Victoria, Vancouver Island, May 17th, 1893. (*Macoun.*)

The whole genus needs revision as altogether too many species have been made.

122. **EURHYNCHIUM**, Schimp.

768. **E. strigosum**, (HOFFM.) BR. & SCH.

On rotten logs, Edmonton, Ont., 1892. (*Jas. White.*) On earth, Jumping Pound Creek, Alta., 1897; on hillsides, Old Wives' Creek, Assa., 1895; on earth in a ravine at Woodstock, New Brunswick, 1899; on earth and logs, Algonquin Park, Ont., 1900. (*Macoun.*) Common at Dawson, Yukon. (*Williams.*)

Subsp. **præcox**, HEDW.; Kindb., Bryol. N. Am. & Eur., 104.

On rocks, Deer Park, Lower Arrow Lake, Columbia River, B.C., June 4th, 1890. (*Macoun.*)

776. **E. graminicolor**, BRID.

E. Sullivantii, (Spruce); Can. Cat., Pt. VI., 206,

On limestone rocks, quite common at Foster's Flats, Niagara River, Ont., 1901. (*Macoun.*)

777. **E. hians**, (HEDW.) LESQ. & JAMES.

On earth in woods at Southampton, Ont., August 20th, 1901. (*Macoun.*)

778. **E. Stokesii**, (TURN.) BRUCH & SCHIMP.

Specimens from old logs and damp rocks at Hastings, B.C., April 6th and 8th, 1889, are placed here by Dr. A. G. Grout. They were placed with *E. hians* by Dr. Kindberg in Part VI., p. 206. (*Macoun.*)

Subsp. **pseudo-speciosum**, KINDB. Bryol. N. Am. & Eur., 95.

Leaves squarrose; costa vanishing below the acumen. Stem creeping. Capsules unknown.

On earth under a log, Sea's farm, Victoria, Vancouver Island, May 6th, 1893. (*Macoun.*)

780. ***E. semiasperum***, C. M. & KINDB.

The specimen on which this species is based is referred to *Brachythecium plumosum* by Dr. A. J. Grout.

1158. ***E. subscabridum***, KINDB., Bryol. N. Am. & Eur., 93.

Differs from *E. Sullivantii*: Stem subjulaceous; branches attenuate, longish, nearly crowded. Leaves shorter, more concave and longer decurrent; alar cells more numerous. Stem-leaves filiform-pointed; branch leaves ovate-oblong, long-acuminate. Tufts pale green. Sometimes pseudo-monoecious. Capsules unknown.

Newfoundland. (*Waghorne.*) On limestone rocks at Ottawa, Ont. We have no specimens. (*Macoun.*)

1159. ***E. pseudo-velutinoides***, KINDB., Revue Bryol., 1895.

Leaves subulate-acuminate filiform-pointed, not or slightly, striate, faintly reflexed near the base; cells sublinear; costa short. Stem-leaves entire subovate or ovate-oblong; costa scarcely reaching to the middle. Branch-leaves ovate-lanceolate denticulate all around; costa reaching somewhat above the middle. Perichetial leaves with very long filiform point. Capsules not seen; pedicel rough. Tufts loose, green. Stem not creeping.

On earth, Sea's farm, near Victoria, Vancouver Island, May, 1893. (*Macoun.*)

1160. ***E. scabridum***, LINDB.; Kindb., Bryol. N. Am. & Eur., 94.

On earth in woods, Otter Slide Creek, Algonquin Park, Ont., July 19th, 1900. (*Macoun.*)

1161. ***E. subcæspitosum***, KINDB., Revue Bryol., 1895.

Differs from *E. illecebrum* and *cæspitosum*; leaves narrower, less crowded and not densely appressed; those of the stem ovate-oblong often filiform-pointed; cells generally linear except the dilated hyaline alar and lowest basal. Branch-leaves denticulate only in upper quarter. Tufts yellowish green, faintly glossy. Capsules unknown.

On wet rocks, Goldstream, near Victoria, Vancouver Island, June 2nd, 1893. (*Macoun.*)

Dr. A. J. Grout refers this species to *Brachythecium asperimum* mixed with what is probably a *Scleropodium*.

1162. ***E. Macounii***, KINDB., Revue Bryol., 1895.

Stem-leaves ovate-oblong, long-acuminate, often filiform-pointed, denticulate at least at the acumen. Branch-leaves subovate-lanceolate, obtusate, denticulate below; upper cells rhombic, alar hyaline, subquadrate, the others sublinear-lanceolate; costa stout, vanishing above the middle. Perichetial leaves long-acuminate, filiform-pointed, denticulate above. Capsule narrow-cylindric, suberect, nearly straight; lid rostellate. Tufts golden, glossy or green. Stem subpinnate; branches acute.

On rocks, Mount Finlayson, near Goldstream, Vancouver Island, 1887. (*Macoun.*)

1163. ***E. glaciale***, BR. EUR.

Greenland. (*Berggern.*) On trees in a swamp at Big Intervale, Margaree, Cape Breton Island, N.S., July 20th, 1898. (*Macoun.*)

1164. ***E. Labradoricum***, KINDB., Bryol. N. Am. & Eur. 101.

Differs from *E. glaciale*: Leaves larger, somewhat glossy, not appressed when dry; cells sublinear except the large not numerous alar ones; costa vanishing near the middle. Stem-leaves generally entire; branch-leaves long-acuminate minutely denticulate above. Perichetial leaves patent. Capsule curved; pedicel quite smooth, 3-4 cm. long; lid acute; peristome not seen.

Fort Chimo, Ungava Bay, Labrador, Sept. 9th, 1896. (*A. P. Low.*)

1165. ***E. acutifolium***, KINDB., Revue Bryol., 1895.

Differs from *E. strigosum*: Leaves long-distant, long-decurrent, with long subulate acumen, spreading also when dry; branches more distant pedicel of capsule longer; monoecious.

On wet logs near Victoria, Vancouver Island, May 25th, 1893
(*Macoun.*)

123. **RAPHIDOSTEGIUM, Lesq. & James.**732. **R. recurvans**, (SCHW.) LESQ. & JAMES.

On old logs at Woodstock, N.B., 1899; on earth, on old logs, in a cedar swamp at Sherkstone, near Port Colborne, Ont., 1901. (*Macoun.*)

737. **R. Roellii**, REN. & CARD.

On rocks in a ravine, Big Intervale, Margaree, Cape Breton Island, N.S., July 16th, 1898. (*Macoun.*)

1166. **R. laxepatulum**, LESQ. & JAMES, Mosses of N. Am. 358.

On old logs, Big Intervale, Margaree, Cape Breton Island, N.S., July 20th, 1898; on roots of trees, Dawson route, July, 1872; in thick mats on the bases of trees at Belleville, Ont., 1868; also on logs, Ste. Anne des Monts River, Gaspé Co., Que., Aug., 1882. The last three specimens were placed under *R. recurvans* in Part VI., p. 308. Mrs. E. G. Britton discovered these and other inaccuracies in the determination of species in this genus. (*Macoun.*)

1167. **R. Whitei**, KINDB., Bryol. N. Am. & Eur. 101.

Leaves faintly or not recurved, generally entire below the acumen, with serrate filiform or subulate point; alar cells hyaline. Perichetial leaves dentate at the long acumen. Capsule suboval, curved or oblique; teeth pale; segments entire, beak not long; pedicel short. Stem pale or red. Tufts green. Monoecious.

On old logs at Edmonton, Ont., 1892. (*Jas. White.*) On old logs in woods, Big Intervale, Cape Breton Island, N.S., 1898; also on old logs, Algonquin Park Ont., 1900. (*Macoun.*)

124. **RHYCHOSTEGIUM, Schimp.**792. **R. rusciforme**, (WEIS.) SCHIMP.

On stones in brooks, Big Intervale, Margaree, Cape Breton Island, N.S., 1898; on stones, Aroostook Falls, N.B., Sept. 1899. (*Macoun.*)

791. **R. serrulatum**, (HEDW.) LESQ. & JAMES, subsp. **oriense**, Kindb., Bryol. N. Am. & Eur. 63.

Leaves subovate nearly crowded, shorter and less distant than the species; alar cells more distinct. Capsule smaller; pedicel short.

On earth at Leamington, Essex Co., Ont., Sept., 21st, 1890. Referred to *R. serrulatum* in Part VI., p. 210. (*Macoun.*)

Subsp. **hispidifolium**, KINDB., BRYOL. N. Am. & Eur. 68

Branches longer. Leaves very long, ovate-lanceolate, long-acuminate sharply serrate. Capsules and flowers unknown.

On rocks at Craigflower Road, Victoria, Vancouver Island, May 30th, 1893; on old logs, Hastings, B.C., April, 1883. (*Macoun.*)

1168. **R. subintegrifolium**, KINDB., BRYOL. N. Am. & Eur. 68.

Leaves decurrent chlorophyllose ovate-oblong, short-pointed faintly striate; alar cells somewhat numerous, the others sub-linear; costa mostly thin generally reaching to the acumen, sometimes thicker, shorter and forked. Capsule subobovate or arcuate; pedicel smooth; lid and male flowers not seen. Habit of *R. serrulatum*.

On logs and earth, Revelstoke, B.C., May 5th, 1890; on earthy banks by the sea at Comox, Vancouver Island, June 20th, 1893. (*Macoun.*)

1169. **R. Revelstokense**, KINDB., BRYOL. N. Am. & Eur. 67.

Leaves ovate-lanceolate, long-subulate, denticulate, plicate and pellucid, sometimes short-decurrent; cells lanceolate except the alar; costa somewhat thick, vanishing above the middle or shorter. Capsule arcuate; lid rostellate; pedicel short, smooth. Stem creeping subpinnate or irregularly divided. Tufts pale or light green. Male flowers not found.

Newfoundland. (*Waghorne.*) On old logs at Revelstoke, B.C., May 5th, 1890. (*Type*) On earthy banks, Comox, Vancouver Island, June 20th, 1893. (Dr. A. J. Grout makes this specimen *Brachythecium lampochryseum*. (*Macoun.*))

1170. **R. pseudo-serrulatum**, KINDB., BRYOL. N. Am. & Eur. 67.

Leaves ovate or ovate-oblong, minutely denticulate, striate and chlorophyllose, not or indistinctly decurrent; cells lanceolate, the lower shorter and more dilated; costa thin, vanishing above the middle. Stem-leaves with a short-acuminate or filiform-point; branch-leaves with a short, subulate, sometimes twisted point.

Capsule arcuate ; lid apiculate ; pedicel rough, very long. Stem glossy radiculose at the base. Monoecious. Habit of *R. serrulatum*.

Harbour Deep, Seal Cove and Western Cove, Newfoundland, Oct., 1891. (*Waghorne*.) Canaan Forks, N.B., Oct., 1891. (*Moser*.) On earth in woods at Ottawa, Ont., Oct., 12th, 1889. Neither Mrs. Britton nor Dr. Grout accept this species as they say the specimens referred to it are not all the same thing. (*Macoun*.)

125. **THAMNIUM**, Schimp.

794. **T. neckeroides**, BRUCH & SCHIMP.

Porotrichum neckeroides, (Schwægr.) Willisms.

Canon City, Dyea Creek, Alaska. (*Williams*.)

120. **PLAGIOTHECIUM**, Schimp.

800. **P. trichophorum**, (SPRUCE) LESQ. & JAMES.

P. piliferum, Swartz ; Kindb., Bryol. N. Am. & Eur., 71.

Coast of Queen Charlotte Islands, 1898. (*Dr. C. F. Newcombe*.) Cañon City, Skagway and Lake Lindeman. (*Williams*.)

801. **P. pulchellum**, (DICKS.) BRUCH & SCHIMP.

Above the basin, Juneau, Alaska. (*Miss G. Cooley*.) Common on earth and rock at Lake Marsh and Dawson, Yukon. (*Williams*.) Chilliwack Valley, B.C., 1901 ; on dead moss, St. Paul Island, Behring Sea, 1892. (*J. M. Macoun*.)

807. **P. Muehlenbeckii**, BRUCH & SCHIMP.

Campylium striatellum, Kindb., Bryol. N. Am. & Eur., 119.

Port Etches, Alaska, Lat. 60° 30', Aug., 1892. (*J. M. Macoun*.) On rocks and damp earth, Big Intervale, and Half Way Brook, Cape Breton Island, N.S., Aug., 1898 ; on old logs at Foster's Flats, Niagara River, Ont., 1901. (*Macoun*.)

808. **P. denticulatum**, (LINN.) BRUCH & SCHIMP.

On earth and rocks, very common, in Algonquin Park, Ont. ; also at Niagara Falls and Camlachie, Ont., 1901. A very abundant species. (*Macoun*.) Head of Lake Bennett and Dawson, Yukon. (*Williams*.)

810. **P. Sullivaniae**, SCHIMP.

P. Roesei, Hampe ; Kindb., Bryol. N. Am. & Eur., 70.

On hummocks in swamps, Edmonton, Ont., Oct., 1892. (*Jas. White.*) On earth on roots, Meech's Lake, near Chelsea, Que., Sept. 23rd, 1893. (*Macoun.*)

811. **P. membranosum**, KINDB.

Rhyncostegium membranosum, Kindb., Bryol. N. Am. & Eur., 67.

On old logs, at Edmonton, Ont., 1892. (*Jas. White.*) On old logs, Jumping Pound Creek, Rocky Mountains, Alta., June 14th, 1897. Mrs. E. G. Britton doubts the correctness of the identification of the latter specimen. (*Macoun.*)

812. **P. brevipungens**, KINDB.

Old logs, Johnstone's Lake, North Wakefield, Que., June 2nd, 1898; also on old logs, Carleton Place, Ont., May 12th, 1900. (*Macoun.*)

813. **P. aciculari-pungens**, C. M. & KINDB.

On the ground, Halifax Co., N.S., July, 1894. (*J. Moser.*) On rocks in a ravine, Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898; on rocks, Otter Slide Creek, Algonquin Park, Ont., July 19th, 1900. (*Macoun.*)

1171. **P. diversifolium**, KINDB. in litt.

Fort Chimo, Ungava Bay, Labrador, Aug. 27th, 1896. (*A. P. Low.*)

814. **P. undulatum**, BRUCH & SCHIMP.

Loring, Juneau, and also at Salmon Creek, near Juneau, Sitka. (*Miss G. Cooley.*)

127. **AMBLYSTEGIUM**, Schimp.815. **A. minutissimum**, SULLIV. & LESQ.

On earth in a ravine at Goldstream, near Victoria, Vancouver Island, June 2nd, 1893. (*Macoun.*)

816. **A. Sprucei**, BRUCH & SCHIMP.

On old logs, Jumping Pound Creek, and on earth, Crow's Nest Pass, Rocky Mountains, Alta., 1897. (*Macoun.*) In good fruit at Dawson, Yukon, August 7th, 1899. (*Williams.*)

817. **A. speirophyllum**, KINDB.

Mr. L. C. Cheney says of this species that it is sterile and probably a form of *A. irriguum* or *A. varium*. (Bot. Gaz. Vol. XXIV 141).

819. **A. subtile**, BRUCH & SCHIMP.

On bark of trees, C  che Lake, Algonquin Park, Ont., June, 1900. (*Macoun.*)

822. **A. serpens**, BR. EUR. var. **subenerve**, REN. & CARD.; Bot. Gaz., Vol. XXX., p. 22.

Bay of Islands, Newfoundland. (*Waghorne.*)

1172. **A. pseudo-confervoides**, KINDB., Revue Bryol., 1895.

Leaves smaller, shorter and less distinctly denticulate than in *A. confervoides*; cells wider oval-oblong. Stem-leaves ovate-oblong obtusate acute or short-acuminate. Branch-leaves suberect when moist. Capsule arcuate; lid conic-obtuse; pedicel very short. Perichetial leaves nearly entire. Stems and branches subjulaceous.

On flat limestone rocks near the Experimental Farm, west of Ottawa, Ont., April 16th, 1893; also in same habitat at Carleton Place, Ont., and west of Hull, Que., 1899. (*Macoun.*)

823. **A. porphyrhizon**, (LINDB.) SCHIMP.

On rocks, Credit Forks, Ont., Sept., 1893. (*Jas. White.*) On old logs at Baddeck, Cape Breton Island, N.S., July 1898; on earth along Scull Creek, Crane Lake Assa, June, 1894; on earth along Jumping Pound Creek, Rocky Mountains, 1897. (*Macoun.*)

824. **A. varium**, (HEDW.) LINDB.

On rotten logs, Edmonton, Ont., Oct., 1892. (*Jas. White.*) In woods, C  che Lake, Algonquin Park, Ont., 1900; quite common

on stones and earth at Niagara and Queenston, Ont., 1901 ; on earth in the Cypress Hills, Assa., June, 1894 ; on rocks, Crow's Nest Pass, Rocky Mountains, Alta., Aug., 1897. (*Macoun.*)

825. **A. orthocladon**, (BEAUV.) LESQ. & JAMES Reduced to *A. varium* by Mr. L. S. Cheney. Bot. Gaz., Vol. XXIV., 265.

On earth below Queenston Heights, Ont., May 8th, 1901. (*Macoun.*)

827. **A. fluviatile**, BRUCH & SCHIMP.

On stones in brooks, Cape Breton Island, N.S., July, 1898 ; Meech's Lake, Que., and in Rockcliffe Park, Ottawa, Ont., 1900. (*Macoun.*)

828. **A. curvipes**, GRUMB.

A. Kochii, Bruch & Schimp. ; L. C. Cheney. Bot. Gaz., Vol. XXIV., p. 265.

On old logs, Foster's Flats, Niagara Falls, Ont., May 13th, 1901 ; on earth at the base of trees in woods at Tilsonburg, Ont., June 26th, 1901. (*Macoun.*)

829. **A. adnatum**, (HEDW.) LESQ. & JAMES.

On stones in woods, Credit Forks, Ont., 1892. (*Jas. White.*)
On sandstone rocks, Cypress Hills, Assa., June, 1894. (*Macoun.*)

1173. **A. Lescurii**, SULLIV. ; Lesq. & James Mosses of N. America, 376.

Platyloma Lescurii (Sulliv.) ; Kindb., Bryol. N. Am. & Eur., 79.

On wet rocks, Joe Creek, and Petewawa River, Algonquin Park, Ont., July 1900. (*Macoun.*)

831. **A. compactum**, (C. MUELL.) BRUCH & SCHIMP.

Very common at Dawson, Yukon. (*Williams.*)

128. HYPNUM, LINN.

Subgenus I. **CAMPYLIUM**, Linn.

836. **H. hispidulum**, BRID.

On earth by the bases of trees, Edmonton, Ont., 1892. (*Jas. White.*) On dead sticks, Otter Slide Creek, Algonquin Park, Ont.,

July, 1900; at Camlachie and Wyoming, Lambton Co., Ont., 1901. (*Macoun.*) On logs, at Dawson, Yukon. In fruit, July 16th, 1899. (*Williams.*)

839. **H. chrysophyllum**, BRID.

Dawson, Yukon. (*Williams.*) On old logs at the Tunnel, Sarnia, Ont., 1901. (*Macoun.*)

843. **H. Macounii**, KINDB.

L'Anse-au-Mort, Labrador, 1894; on rocks, Cook's Brook and Middle Arm, Newfoundland, 1896-97. (*Waghorne.*)

844. **H. stellatum**, SCHREB.

Head of Lake Bennett and at Dawson, Yukon. (*Williams.*)

845. **H. polygamum**, (BRUCH & SCHIMP.) WILS.

On earth in a bog at Galt, Ont., 1901. (*Macoun.*) Klondike River bottom, Yukon. (*Williams.*)

1174. **H. sinuolatum**, KINDB. in Hedwigia, 1897, p. 47.

Leaves sinuolate short-acuminate; alar cells hyaline, the others sublanceolate; costa long, somewhat thick. Stem irregularly divided. Tufts dense. Capsules unknown.

On rocks in a ravine, Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898. (*Macoun.*)

1175. **H. Fitzgeraldi**, RENAULD; Kindb., Bryol. N. Am. & Eur. 120.

Newfoundland. (*Waghorne.*)

Subgenus II. **HARFIDIUM**.

1176. **H. aduncum**, LINN.

Newfoundland. (*Waghorne.*) Digge's Island, Hudson Bay, 1885. (*Dr. R. Fell.*) In the vicinity of Belleville, Hastings Co., and in a swamp at Wooler, Ont.; swampy ground, Jupiter River, Anticosti, Que., 1883; Cottonwood Coulee, Battle Creek, south of Cypress Hills, Assa., July, 1895; swampy earth at Kamloops, B.C., June, 1889. (*Macoun.*)

847. **H. Sendtneri**, SCHIMP.

On stones in a brook near Aspy Bay, Cape Breton Island, N.S. Aug., 1898; in pools in the Cypress Hills, Assa., June 24th, 1894; in a swamp at Johnstone's Harbour, Bruce Peninsula, Ont., Aug., 1901. (*Macoun.*)

848. **H. Cossoni**, SCHIMP.

On earth in wet places, Fort Chimo, Ungava Bay, Labrador, Aug., 1896. (*A. P. Low.*)

849. **H. vernicosum**, LINDB.

In a swamp, Mosquito Bay, Labrador, Lat. $61^{\circ} 25'$, Aug. 13th, 1898. (*A. P. Low.*)

1177. **H. subsecundum**, KINDB., Revue BRYOL., 1895.

Leaves not large, nearly crowded, entire; cells linear, the lower basal, yellow; costa vanishing below the acumen. Stem-leaves from a broad-ovate base, short-acuminate; costa very thick, branch leaves from a subovate base (more or less gradually) long-subulate, subsecund when dry; costa thinner. Capsule arcuate; pedicel short; teeth brownish. Stem creeping.

Newfoundland. (*Waghorne.*) On earth, Credit Forks, Ont., Sept., 17th, 1892. (*Jas. White.*)

850. **H. Wilsoni**, SCHIMP.

Cottonwood Coulée, Battle Creek, south of Cypress Hills, Assa., July 4th, 1895. (*Macoun.*) Middle of Lake Lebarge, Yukon. (*Williams.*)

851. **H. brevifolium**, LINDB.

H. Bambergeri, Schimp.; Kindb., Bryol. N. Am. & Eur., 130.

On rocks, Jumping Pound Creek, Rocky Mountains, Alta., June 14th, 1897. (*Macoun.*)

853. **H. revolvens**, SWARTZ.

Boggy places, Nagai Island, Alaska, Sept., 1897. (*J. M. Macoun.*) In a bog north of Prince Albert, Sask., July 3rd, 1896 (*Macoun.*) Common in swamps at Dawson, Yukon. (*Williams.*)

854. *H. fluitans*, LINN.

In bogs, Sable Island, N.S., 1899 ; in bogs, Johnston's Lake, near North Wakefield, Que., 1898 ; abundant, Algonquin Park, Ont., 1900. (*Macoun.*) In swamps near Marsh Lake, Yukon. (*Williams.*) Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

855. *H. exannulatum*, GUEMBEL.

Boggy spots and ponds, Sable Island, N.S., Aug., 1899. (*Macoun.*) Bogs, Fort Chimo, Ungava Bay, Labrador, September, 1896. (*A. P. Low.*) Bogs on Barren Grounds, Lat. 62° 56', Long. 102° 45' W., Aug., 1893. (*J. B. Tyrrell.*)

Subsp. *pseudo-lycopodioides*, KINDB., Ott. Nat. Vol. XIV. p. 82.

Agrees with *H. exannulatum* in the leaves being long-decurrent and with large hyaline alar cells ; but the leaves are shortish and entire with generally an obtusate acumen ; costa thicker. Capsules not seen. Resembles in habit *Calliergon ochraceum* but the stem-leaves are plicate as in *Hypnum lycopodioides*.

On stones in woods at Margaree, Cape Breton Island, N.S., July, 1898. (*Macoun.*)

Subsp. *pseudo-stramineum*, KINDB., Bryol. N. Am. & Eur. 132.

Leaves green, entire, often straight ; those of the branches often with oblong apical cells. Capsules not seen.

Newfoundland. (*Waghorne.*) In pools near Victoria, and on earth in a wet field on Sea's farm, near Esquimalt, Vancouver Island, May, 1893. (*Macoun.*)

856. *H. uncinatum*, HEDW.

Cañon City and Dyea Creek, Alaska ; Lake Lindeman, Lake Lebarge and Dawson, Yukon. (*Williams.*) Chilliwack Valley, B.C. (*J. M. Macoun.*)

Var. *micropterum*, KINDB.

St. Paul Island and St. George Island, Behring Sea, July, 1892. (*J. M. Macoun.*)

Var. **plumulosum**, SCHIMP.

Among boulders in rather dry places, Lake Lindeman, Yukon.
(*Williams.*)

Var. **subsymmetica**, (CARD.) KINDB.

In the Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

857. **H. Moseri**, KINDB.

Fort Chimo, Ungava Bay, Labrador, Sept., 1896. (*A. P. Low.*)
On rocks, Big Intervale, Margaree, Cape Breton Island, N.S.,
July, 1898. (*Macoun.*)

1178. **H. orthothecioides**, LINDB. ; KINDB., Bryol. N. Am. &
Eur. 133.

Greenland. (*Dr. Rosenzinge.*)

858. **H. longinerve**, KINDB.

In a pool in woods, Victoria Park, Ottawa Ont., June 19th.
1900. (*Macoun.*)

859. **H. conflatum**, C. M. & KINDB.

Middleton Island, Alaska, Lat. 59° 30', 1892 ; St. Paul Island,
Behring Sea, July, 1892. (*J. M. Macoun.*)

1179. **H. amblyphyllum**, R. S. WILLIAMS, Bull. of New York
Bot. Gar., Vol. II., p. 139.

* Alar cells often inflated nearly to costa and some small, nearly quadratic cells at margin just above the alar cells. Medium leaf-cells .005 or .006 mm. wide and mostly .035 to .060 mm. long. Younger branch leaves narrowly lanceolate with very short costa. Perichetial leaves not plicate, closely sheathing, but little larger or more pointed than stem leaves, entire, with faint costa extending up $\frac{1}{2}$ or more. Seta up to 6 cm. long. Capsule 2.5 by 1 mm., with short upright collum, but much curved and nodding above. Lid acutely conical, its height less than basal diameter. No annulus. Peristome teeth broadly hyaline bordered above, outer plates finely punctate below. Basal membrane of endostome scarcely $\frac{1}{2}$ the teeth in height with solid segments and 2 or 3 nodose cilia between. Transversely elongated cells about mouth

of capsule in 3 or 4 rows, the cells below roundish to oblong. Stomata roundish to short oblong, up to .040 mm. long. Minutely roughened spores up to .016 mm.

This species is intermediate between *exannulatum* and *pseudostamineum*. From the first it differs in the short, broadly-pointed leaves, the angular stem with fewer thickened cells in the outer walls and leaf cells not pitted. The second differs in being monoecious, with entire, not decurrent leaves and not angular stems.

At Dawson, Yukon, in swamp water, in fine fruit July 17th, 1898. (*Williams.*)

SUBGENUS III.—**CRATONEURON**, Sulliv.

860. **H. filicinum**, LINN.

On rocks by springs, Niagara River, May, 1901. (*Macoun.*)
In springs, head of Lake Bennett, Yukon. (*Williams.*)

861 **H. chloropterum**, C. M. & KINDB.

Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

862. **H. Novæ-Angliæ**, SULLIV. & LESQ.

On old logs, Meech's Lake, near Chelsea, Que., Sept. 23rd, 1893. (*Macoun.*)

863. **H. commutatum**, HEDW. subsp. **sulcatum**, SCHIMP.
Kindb., Bryol. N. Am. & Eur., 127.

Greenland. (*Berggren.*) Newfoundland. (*Waghorne.*)

864. **H. falcatum**, BRID.

On earth about springs, Jumping Pound Creek, Alta.; also Crow's Nest Pass, Alta., Rocky Mountains, Aug., 1897. (*Macoun.*)
About springs at the head of Lake Bennett, Yukon. Leaves nearly entire or slightly serrulate below. (*Williams.*)

865. **H. decipiens**, (DE NOT.) KINDB.

In a spring, Medicine Lodge, south of Wood Mountain, Assa., June 14th, 1895. (*Macoun.*) Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

SUBGENUS IV.—**RHYTIDIUM**, Sulliv.866. **H. rugosum**, LINN.

Fort Chimo, Ungava Bay, Labrador, Aug., 1896. (*A. P. Low.*)
On Pike's Portage, Great Slave Lake, May, 1900. (*J. W. Tyrrell.*)
Lake Marsh, and Mile's Cañon, sterile specimens abundant, Dawson; fruit not rare. (*Williams.*)

SUBGENUS V.—**CTENIUM**, Sulliv.867. **H. crista-castrensis**, LINN.

Lake Lindeman and Klondike River bottom. Not found in fruit. (*Williams.*)

SUBGENUS VI.—**CTENIDIUM**, Hedw.1180. **H. molluscoides**, KINDB., Revue Bryol. 1895.

Leaves nearly entire, distinctly decurrent; alar cells somewhat large, well-defined. Capsule small, cylindric, arcuate. Otherwise like *H. molluscum*, Hedw.

On logs, Bay Bull Arm, Newfoundland. (*Waghorne.*) On old logs, Baddeck, Cape Breton Island, N.S., July 9th, 1898. (*Macoun.*)

1181. **H. Alaskæ**, KINDB., BRYOL. N. Am. & Eur. 142.

Leaves entire, sub-decurrent, gradually acuminate; alar cells large, hyaline well-defined. Capsule subovate or arcuate; pedicel short. Tufts green or pale yellow. Stem creeping subpinnate or plumiform.

On old logs, Newfoundland. (*Waghorne.*) On trees, Canaan Forks, Queen's Co., N.B., Oct., 1894. (*J. Moser.*)

SUBGENUS VII.—**DREPANIUM**, C. Muell.1182. **H. reptiliforme**, KINDB., Revue Bryol. 1895.

Differs from *H. reptile*; leaves larger, long-acuminate; those of the stem ovate-oblong, denticulate above, those of the branches ovate-lanceolate, denticulate all around; alar cells large hyaline. Capsule pale yellow; segments yellow; lid not seen; pedicel longer.

On the bases of trees in woods, Brighton, Northumberland Co., Ont., Oct. 13th, 1893. (*Macoun.*)

1183. **H. perichæstiale**, BR. EUR.; Kindb., Bryol. N. Am. & Eur., 137.

Leaves subovate, acute or sometimes short-acuminate; alar small, dusky, on a narrow triangular space, the others lanceolate-oblong. Capsule finally brown; pedicel short.

On boulders in woods at Ottawa, Ont., Sept., 1891. (*Macoun.*)

869. **H. reptile**, MICHX.

On rocks at Dawson, Yukon. Leaves not decurrent. (*Williams.*)

870. **H. pallescens**, SCHIMP.

Stony Lake, Peterboro Co., Ont., July, 1892. (*Thos. Walker.*)
Credit Forks, Ont., 1892. (*Jas. White.*)

871. **H. fertile**, SENDT.

Very common in woods on rocks, earth and logs at Baddeck, Margaree and Half-Way Brook, Cape Breton Island, N.S., 1898; on old logs at Woodstock, N.B., July, 1899; common at Casselman, near Ottawa, Ont., June, 1892; also on old logs, Cûche Lake, Algonquin Park, Ont., June, 1900. (*Macoun.*)

872. **H. Waghornei**, KINDB.

H. Canariense, Mitt.; Kindb., Bryol. N. Am. & Eur. 148.

On damp rocks, Woodstock, N.B., June 3rd, 1899; on old logs in woods at Baddeck, Cape Breton Island, N.S., July, 1898. (*Macoun.*)

873. **H. fastigiatum**, BRID.

Near Halifax, N.S., June 19th, 1883; on trees in woods at Owen Sound, Ont., Sept. 12th, 1890. (*Macoun.*) Fort Chimo, Ungava Bay, Labrador, August, 1891. (*A. P. L. w.*)

874. **H. hamulosum**, BRUCH & SCHIMP.

Port Etches, Alaska, Lat. 60° 30', June 18th, 1892. (*J. M. Macoun.*) At the bases of trees in damp places, at Dawson, Yukon. (*Williams.*)

1184. **H. implexum**, REN. & CARD., Bot. Gaz., Vol. XXII., 52.

Tufts depressed, light green. Stems intricate, pinnately ramulose, branchlets hooked, fastigate above. Leaves falcate-secund,

from a broadly ovate-deltoid base rather suddenly constricted into a narrow subulate acumen, plane on the margins, quite entire or subdenticulate at the base of the acumen ; costa double, short; cells narrowly linear, those of the angles few but distinct, small, quadrate, greenish or pellucid. Fruit and flowers unknown.

Allied to *H. hamulosum*, Schimp., but more robust and distinct by the light-green tint; the leaves broader at base and more suddenly constricted into a subulate acumen and the alar cells more numerous and more conspicuous, much resembling the small green form of *H. cupressiforme*, Linn., but in this the leaves are narrower and the alar cells much more numerous and conspicuous.

Seal Island, Labrador, 1893. (*Waghorne*.)

1185. ***H. subeugyrium***, REN. & CARD., Bot. Gaz., Vol. XXII., 52.

Monoecious, resembling *H. eugyrium*, Sch., var. *MacKayi*, Sch., from which it differs by the alar cells of the leaves small, quadrate, not forming excavate auricles and the capsule exannulate. From the forms of *H. palustre*, Linn., having the leaves subimbricate, it is distinguishable by the minutely denticulate apex of the leaves and by the costa always double and shorter.

Bay of Exploits, Newfoundland, 1893. (*Waghorne*.) On rocks in a brook at Woodstock, N.B., July 3rd, 1899; on wet rocks, Petawawa River, Algonquin Park, Ont., July 24th, 1900. (*Macoun*.)

1186. ***H. orbicularicordatum***, REN. & CARD., Bot. Gaz., Vol. XXII., p. 52.

Tufts very soft, pale lurid green above, discoloured whitish yellow and brownish-variegated below. Stems slender, erect 4—9 cm. high, simple or sparingly branching, not radiculose, cuspidate at apex. Leaves soft, erecto-patent or very loosely imbricate, subundulate when dry, decurrent at base, broadly cordate-suborbicular, very obtuse, quite entire, slightly sulcate; costa thin, vanishing far from the apex; areolation loose, pellucid; cells soft, thin-walled, rhomboidal-hexagonal in the middle, the marginal narrower, the upper shorter, the alar very loose, large soft and empty. Flowers and fruit unknown.

Depot Island, northwest shore of Hudson Bay, Lat. 63° 59' W. Long. 90° 20' 1893. (*George Comar*.)

Easily distinguished from the allied *H. cordifolium*, Hedw., by the nearly simple stems, the very soft leaves, and the broader and looser areolations.

876. *H. circinale*, Hook.

Common in the Chilliwack Valley, B.C. (*J. M. Macoun.*) At Salmon and Sheep creeks, near Juneau, Alaska. (*Miss G. Cooley.*) In good fruit March 28th, 1898, Cañon City, Dyea Creek; also common on fallen logs at Skagway, Alaska. (*Williams.*)

877. *H. Sequoieti*, C. MUELL.

Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

1187. *H. subplicatile*, (LINDB.) LIMPR.

On damp earth and rock, Lake Lindeman, Yukon. This plant is very closely related to *callichroum* but differs in being rather smaller with regularly pinnate branches, leaves wider just above the base and abruptly narrowed to the insertion, capsule shorter. (*Williams.*)

880. *H. imponens*, HEDW.

On logs in swamps, Edmonton, Ont., 1893. (*Jas. White.*) On rocks in a ravine, Margaree, Cape Breton Island, N.S., July, 1898; on logs in woods Otter Slide Creek, Algonquin Park Ont., July, 1900; on old logs below Queenston Heights, Ont., 1901. (*Macoun.*)

881. *H. subimponens*, LESQ.

At Sheep Creek and at Gold Creek Cañon, near Juneau, Alaska. (*Miss G. Cooley.*)

882. *H. revolutum*, (MITT.) LINDB.

On rocks, Moose Mountain, Elbow River, Rocky Mountains, Alta., July, 1897; on birch bark, Algonquin Park, Ont., June 8th, 1900. (*Macoun.*) Lake Lindeman and Lake Marsh, Yukon. (*Williams.*)

883. *H. plicatile*, (MITT.) LESQ. & JAMES.

On rocks, Jumping Pound Creek, Braggs' Creek, Elbow River, and Crow's Nest Pass, Rocky Mountains, Alta., 1897. (*Macoun.*)

884. **H. cupressiforme**, LINN.

On sandy soil, Sable Island, N.S., Aug., 1899; on trunks, C  che Lake, Algonquin Park, Ont., 1900. (*Macoun.*)

Var. **resupinatum**, Sch. ; Ren. & Card. Bot. Gaz., Vol. XXX., p. 23.

Chance Cove, Newfoundland, 1891. (*Waghorne.*)

Var. **brevisetum**, SCHIMP.

On rock, Lake Marsh, Yukon. The sterile specimens referred here possibly belong elsewhere, yet they come very close to this variety. (*Williams.*)

1188. **H. Vaucheri**, LESQ.

Newfoundland. (*Waghorne.*) At the base of a tree at Dawson, Yukon. This species is dioecious. The leaves are entire with flat borders. (*Williams.*)

887. **H. Lindbergii**, MITT.

On rocks at the Cascades, Gatineau River, Que., June, 1900 ; on stones and logs by a brook, Algonquin Park, Ont., June, 1900; on rocks and stones below Queenston Heights, Ont. ; on logs in woods at Point Edward, Sarnia, Ont., 1901. (*Macoun.*)

Var. **elatum**, SCHIMP.

In swamps, Lake Lindeman, Yukon. (*Williams.*)

1189. **H. pseudo-recurvans**, KINDB., BRYOL. N. Am. & Eur. 140.

Differs from *H. Jamesii*, Sulliv.; leaves denticulate all around, ovate-lanceolate, long-acuminate gradually tapering to a filiform point. Perichetial leaves entire below the long-linear point. Capsule obovate. Tufts olivaceous, sparingly radiculose. Lid of capsule and male flowers not seen. Habit of *H. cupressiforme*.

On the base of a tree, Revelstoke, B.C., May 5th, 1890. (*Macoun.*) Referred to *Raphidostegium recurvans* in Part VI., p. 208.

1190. **H. pseudo-complexum**, KINDB., Revue Bryol., 1895.

Leaves entire, not appressed when dry; upper cells lanceolate, lower oblong, angular, (alar) suboval, small not well defined. Stem-leaves ovate or ovate-oblong. Branch-leaves ovate-lanceolate longer-acuminate, often falcate. Tufts dense, pale green. Stems eradiculose irregularly divided; branches not compressed. Capsules unknown. Resembles a var. of *H. molluscum* in habit.

Port Etches, Alaska, June 16th, 1892. (*J. M. Macoun.*)

1191. **H. filiforme**, KINDB., Revue Bryol. 1895.

Stem leaves distant. Leaves ovate with a short subulate or longer and filiform point, faintly denticulate at acumen; those of the stem recurved at one side; upper cells lanceolate, lower oblong, alar few, hyaline. Tufts green, loose and eradiculose, stem long, pinnate; branches distant; paraphyllia broad, very few. Capsules unknown. Dioecious.

On rocks at Banff, Rocky Mountains, July, 1891. (*Macoun.*)

889. **H. curvifolium**, HEDW.

On old logs in woods at Camlachie, Lambton Co., Ont., June 18th, 1901. (*Macoun.*)

890. **H. pratense**, KOCH.

On hummocks in a swamp at Dawson, Yukon. (*Williams.*)

1192. **H. subcomplexum**, KINDB., Revue Bryol. 1895.

Differs from *H. Vaucheri*, Lesq.; leaves larger and shorter, abruptly narrowed from a subovate base; angular cells smaller and finally hyaline without special alar cells. Tufts green.

Sandstone rocks, Wood Mountain and Cypress Hills, Assa., June, 1894-95. (*Macoun.*)

894. **H. nemorosum**, KOCH.

On earth, Leamy's Lake, Hull, Que., Nov. 9th, 1896. (*Macoun.*)

1193. **H. pseudo-nemosum**, KINDB., BRYOL. N. Am. & Eur. 123.

Leaves ovate-oblong, denticulate at the subulate acumen, not distinctly recurved, decurrent, not yellow at insertion; alar cells

small, few, dusky on a short triangular space; apical cells lanceolate, the inner linear-lanceolate. Tufts glossy-velvet-like. Stem subpinnate; branches faintly compressed; paraphyllia broad, not numerous. Capsules unknown. Habit of *Pylaisia velutina*.

Referred in Part VI., p. 240 to *H. nemorosum*. (Macoun.)

1194. **H. hamulosiforme**, KINDB. (N. Sp.) in litt.

On old logs in woods, Câche Lake, Algonquin Park, Ont., June 8th, 1900. (Macoun.)

SUBGENUS IX.—**LIMNOBIUM**, Bruch & Schimp.

898. **H. palustre**, HUDS.

Skagway, Alaska; Lake Marsh and Mile's Cañon, Yukon. (Williams.)

1195. **H. Bestii**, REN. & BRYHN.

This plant is described as a subspecies of *molle* by Renauld and Bryhn, but I think it will stand as a distinct species. It differs from *molle* in having no central strand. It is a larger species also with stems below wiry and harsh with the bases of the broken-off leaves.

Skagway, Alaska. (Williams.)

900. **H. dilatatum**, WILS.

H. alpinum, Schimp.

Lake Lindeman, Yukon. (Williams.)

903. **H. polare**, LINDB.

Growing along the wet shore of Lake Lindeman, Yukon. (Williams.)

908. **H. alpestre**, SWARTZ.

Skagway, Alaska; also Lake Lindeman, Yukon. (Williams.)

910. **H. pseudo-montanum**, KINDB.

Port Etchès, Alaska, Lat. 60° 30', June 13th, 1892. (J. M. Macoun.)

911. **H. eugyrium**, SCHIMP.

On wet rocks, Hunter's Home, Queen's Co., New Brunswick, 1892. (*J. Moser*.) On stones in brooks, Big Intervale, Margaree, Cape Breton Island, N.S., July 20th, 1890. (*Macoun*.)

912. **H. ochraceum**, TURNER.

On rocks, Skeena River, B.C., May 13th, 1892. (*J. M. Macoun*.) Very abundant on stones in brooks in all parts of Cape Breton Island, N.S., 1898; on stones in a brook, Woodstock, N.B., July, 1899. (*Macoun*.) On rocks in bed of stream at Dawson, Yukon. (*Williams*.)

913. **H. stramineum**, DICKS.

Fort Chimo, Ungava Bay, Labrador, Aug., 1896. (*A. P. Low*.) On earth in wet places, Baddeck, Cape Breton Island, N.S., 1898; on earth in a bog, C  che Lake, Algonquin Park, Ont., 1900. (*Macoun*.) Lake Lindeman, Yukon. (*Williams*.)

915. **H. turgescens**, (JENSEN.) SCHIMP.

In a dried up swamp just below the White Horse Rapids, Yukon. Growing in broad depressed mats. (*Williams*.)

Var. **uliginosum**, LINDB.

In swamps, with the preceding. This variety has elongated stems, and distant, more or less spreading leaves. (*Williams*.)

916. **H. scorpioides**, LINN.

Just above Lake Lindeman in blackish mats almost covering the bottom of a small pond, 12 or 15 inches below the surface. (*Williams*.)

Var. **gracilescens**, SANIO.

In a dried up swamp a few miles below White Horse Rapids, Yukon, covering extensive areas with a mat up to 18 cm. thick. (*Williams*.)

917. **H. badium**, HARTM.

On the margin of a pond just below snow banks about 1000 feet above Lake Lindeman, Yukon; also at Dawson on wet shady banks. (*Williams*.)

SUBGENUS X. **CALLIERGON**, Lesq. & James.918. **H. cordifolium**, HEDW.

Boggy places, St. Paul and St. George islands, Behring Sea, 1897. (*J. M. Macoun.*) In bogs in wet woods, Baddeck, Cape Breton Island, N.S., July, 1898. (*Macoun.*) Klondike River bottom near the mouth. (*Williams.*)

919. **H. giganteum**, SCHIMP.

In a swamp at Golden Lake, Ont., 1900; water holes, Crow's Nest Lake, Rocky Mountains, Alta., 1897. (*Macoun.*) The var. *fluitans* was found in a small stream flowing into Lake Marsh, Yukon. (*Williams.*)

Var. **Labradorensis**, REN. & CARD. Bot. Gaz. Vol. XIX., p. 240.

A notable variety, distinct from the type by the leaves larger and longer and the costa attenuate, vanishing rather far from the apex and often forking.

Battle Harbour, Labrador, 1892. (*Waghorne.*)

920. **H. Richardsoni**, (MITT.) LESQ. & JAMES.

Fort Chimo, Ungava Bay, Labrador, Aug., 1896. (*A. P. Low.*) In a bog, Johnston's Lake, North Wakefield, Que., June, 1898. (*Macoun.*) At Dawson in swamps; in fine fruit, July 27th. (*Williams.*)

921. **H. sarmentosum**, WAHL.

In a small pond by snow banks about 1000 feet above Lake Lindeman, Yukon (*Williams.*)

Var. **fontinaloides**, BERGGREN.

On rocks in the bottom of a small stream near the mouth of Bonanza Creek, Yukon. This is a variety with long slender stems and larger leaves often all green or partly green and partly purple. (*Williams.*)

922. **H. cuspidatum**, LINN.

On earth in wet woods at Louisburg, Cape Breton Island, N.S., Aug., 1898; in a springy place by the railway, near Dow's swamp, Ottawa, Ont., 1900. (*Macoun.*)

1196. **H. subgiganteum**, KINDB., Ott. Nat. Vol. XIV., p. 80.

Differs from *H. giganteum* in having monoecious inflorescence, from *H. cordifolium* in having stems or branches pinnate and leaves auricled—from both in the very short costa of the leaves, which in stem leaves is generally nearly indistinct, in branch leaves reaching nearly to the middle

In a bog north of the Saskatchewan at Prince Albert, Sask., June 30th, 1896. (*Macoun.*)

924. **H. Schreberi**, WILLD.

Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

129. **HYLOCOMIUM**, Schimp.925. **H. splendens**, (HEDW.) SCHIMP.

H. proliferum, Linn.; Kindb., Bryol. N. Am. & Eur., 41.

Very common in all thick woods across the continent. Loring, Sitka, Salmon Creek, and Cañon Creek, near Juneau, Alaska. (*Miss G. Cooley.*) St. Paul Island, Behring Sea. (*Dr. Merriam.*) Lake Lindeman, Thirty-mile River, and Dawson, Yukon. An abundant species. (*Williams.*) Chilliwack Valley, B.C. (*J. M. Macoun.*)

927. **H. umbratum**, (Ehrh.) Schimp.

On old logs in woods, Big Interval, Margaree and Baddeck, Cape Breton Island, N.S., 1898. (*Macoun.*)

928. **H. pyrenaicum**, (SPRUCE) LINDB.

On rocks by a brook at Meech's Lake, near Chelsea, Que., Sept. 23rd, 1893. (*Macoun.*) On rock, Lake Lindeman, Yukon. (*Williams.*)

929. **H. brevirostre**, (EHRH.) SCHIMP.

In a damp ravine, Grand Narrows, Cape Breton Island, N.S., July 27th, 1898. (*Macoun.*)

930. **H. squarrosus**, LINN.

Quite common on old logs in damp woods, Big Intervale, Margaree, Cape Breton Island, N.S., July, 1898. (*Macoun.*) Canaan Forks, Queen's Co., N.B., 1894. (*J. Moser.*) Lake Lindeman, Yukon. (*Williams.*)

931. **H. triquetrum**, (LINN.) BRUCH & SCHIMP.

Roundhouse woods, Niagara Falls, 1901. (*Macoun.*) Yukon River below Fort Selkirk and Klondike River bottom, near its mouth. Not apparently very common. (*Williams.*)

932. **H. robustum**, (HOOK.) KINDB.

Chilliwack Valley, B.C., 1901. (*J. M. Macoun.*)

933. **H. loreum**, (LINN.) SCHIMP.

Common on old logs at Big Intervale, Margaree, Cape Breton Island, N.S., 1898. (*Macoun.*) Port Etches, Alaska, Lat. 60° 30'. (*J. M. Macoun.*) Sitka, Loring, Juneau, alt. 3,000 feet; Sheep Creek, near Juneau, Alaska. (*Miss G. Cooley.*) Cañon City, Dyea Creek and Skagway, Alaska. (*Williams.*)

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